

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF NORTH CAROLINA
ASHEVILLE DIVISION

STATE OF NORTH CAROLINA)	
ex rel. Roy Cooper,)	
Attorney General,)	
)	
Plaintiff,)	No. 1:06-CV-20
)	
vs.)	VOLUME 8B
)	(Pages 1954-2084)
TENNESSEE VALLEY AUTHORITY,)	
)	
)	
Defendant.)	
)	

TRANSCRIPT OF TRIAL PROCEEDINGS
BEFORE THE HONORABLE LACY H. THORNBURG
UNITED STATES DISTRICT COURT JUDGE
JULY 23, 2008

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I N D E XPAGEDEFENDANT'S WITNESSESGORDON PARK

Cross Examination by Mr. Bernstein.....	1957
Redirect Examination by Ms. Gillen.....	1989
Recross Examination by Mr. Bernstein.....	1992

RONALD NASH

Direct Examination by Mr. Lancaster.....	1994
Cross Examination by Mr. Goodstein.....	2021

MICHAEL SCOTT

Direct Examination by Mr. Lancaster.....	2031
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I N D E X O F E X H I B I T S

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PLAINTIFF'S EXHIBITS

No. 363.....	1985	1985
No. 509.....	1985	1985

DEFENDANT'S EXHIBITS

No. 199.....	2044	2044
No. 200.....	2070	2070
No. 201.....	2066	2066
No. 202.....	2066	2066
No. 203.....	2068	2068
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No. 205.....	2072	2072
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1 WEDNESDAY AFTERNOON, JULY 23, 2008

2 THE COURT: All right. Let's have our witness come
3 back around.

4 (Witness resumed the witness stand.)

5 THE COURT: All right. I believe we're in cross
6 examination now.

7 Mr. Bernstein.

8 GORDON PARK

9 CROSS EXAMINATION

10 BY MR. BERNSTEIN:

11 Q. Good afternoon, Mr. Park.

12 A. Good afternoon.

13 Q. I'd like to start by talking about the Cumberland permit,
14 Exhibit Number 187. That permit, you indicated there was a
15 recent addendum to that permit?

16 A. That's correct.

17 Q. And that addendum was promulgated under the Regional Haze
18 Rule.

19 A. That's correct.

20 Q. And that addendum brings the permit limit for sulfur
21 dioxide to 0.5 pounds per million BTU?

22 A. For a 30-day average to meet the BART requirement.

23 Q. I'd like you to take a look at Plaintiff's Exhibit 276
24 which will come up on your monitor. And I direct your
25 attention to Page 14 of that exhibit which is also on your

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1 monitor.

2 There was previous testimony in this case regarding
3 Mammoth Cave National Park. Is that nearby the Cumberland
4 facility?

5 A. I believe it's the closest Class I area to Cumberland.

6 Q. And is it your understanding that the Cumberland BART
7 permit was issued because of Cumberland's impacts on Mammoth
8 Cave?

9 A. The Cumberland permit was issued to avoid impacts on the
10 Mammoth Cave National Park, that's correct.

11 Q. And this page that we're seeing here indicates 2001 to
12 2003 Mean Extinction on the 20 Percent Hazeiest Days at
13 Selected IMPROVE Locations. Do you see that across the top?

14 A. Yes, I do.

15 Q. And this exhibit indicates that Mammoth Cave has the most
16 mean extinction of any of these Class I areas listed on this
17 chart, does it not?

18 A. That is what this chart indicates, yes, sir.

19 Q. The BART permit that was issued for Cumberland, again,
20 has a .5 times per million BTU limit, but the facility is
21 currently emitting at .2 pounds per million BTU; is that
22 correct?

23 A. That is correct.

24 Q. So the permit that was issued under the Regional Haze
25 Rule which is designed to improve hazy conditions will not

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1 affect any reductions at the Cumberland facility, will it?

2 A. I'm not certain. I do not know what emission rate was
3 used to establish -- to develop this data that's shown in this
4 exhibit.

5 Q. I'm simply asking about the emissions rate at the
6 Cumberland facility. Will the new permit addendum of
7 .5 pounds per million BTU cause any reduction in the current
8 rate at Cumberland which you testified was .2 pounds per
9 million BTU?

10 A. We are currently below that rate.

11 Q. Thank you. Now, the Regional Haze Rule, I believe you
12 testified, is designed to reach its goal by the year 2064.

13 A. That is correct.

14 Q. And the Clean Air Interstate Rule, the first milestone in
15 the Clean Air Interstate Rule was 2009 for ozone and 2010 for
16 sulfur dioxide; is that correct?

17 A. That is correct.

18 Q. And the second phases under CAIR were 2015 for both NOx
19 and PM, correct?

20 A. That is correct.

21 Q. So the Clean Air Interstate reaches its goal, if my math
22 is correct, 49 years before the haze rule; is that correct?

23 A. That is correct.

24 Q. And is it still your testimony that the haze rule is a
25 sufficient driver of reductions in the absence of the Clean

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1 Air Interstate Rule when it comes to visibility issues?

2 A. Yes, I feel like with the combination of the Regional
3 Haze Rule, the ambient standard for ozone and the ambient
4 standard for fine particulate, that essentially the same
5 reductions will be achieved. And of course, in TVA's case, as
6 Mr. Myers indicated in his testimony, the vacatur of the CAIR
7 rule, we have not had any changes in our plans.

8 Q. I want to talk some more about some language in your
9 permits. Let's go, actually, to the Bull Run permit which I
10 believe is Exhibit 185. And I'd like to go to the second page
11 of that exhibit.

12 A. Okay. 185, Page 2?

13 Q. Second page, yes.

14 A. Okay.

15 Q. And there's language at the bottom of that page under --
16 well, I'll --

17 MR. BERNSTEIN: Is the court on the same page?

18 Q. At the bottom of that page, sir, beneath the signature of
19 the technical secretary, there appears to be some language --
20 let me start that over.

21 This is the first page of the permit, is it not?

22 A. That's correct, yes.

23 Q. Okay. Now, there's some language, and you'll see it
24 highlighted on your screen. Would you mind reading that
25 language for us.

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1 A. "No authority is granted by this permit to operate,
2 construct, or maintain any installation in violation of any
3 law, statute, code, ordinance, rule, or regulation of the
4 State of Tennessee or any of its political subdivisions."

5 Q. And what this language means is that even if you are in
6 compliance with the permit, you may not be in compliance with
7 all the laws of the State of Tennessee; is that correct?

8 A. The basic purpose of the Title V permit is to incorporate
9 all of the air pollution control requirements. So certainly,
10 operation in accordance with the Title V permit would be
11 operation in terms of air pollution control requirements.
12 What I would interpret this to mean is that if there's some
13 other law, that we would also have to meet that law, too.

14 Q. It sounds to me like what you're referring to is the
15 permit shield; is that correct?

16 A. That is correct.

17 Q. And under the permit shield, correct me if I'm wrong, but
18 if -- how it works is for any requirement that's listed in the
19 permit, if you're in compliance with the permit, you're deemed
20 in compliance with the underlying law; is that correct?

21 A. My understanding of the permit shield is that the permit
22 incorporates all of the applicable requirements. So
23 therefore, compliance with the permit does equate to
24 compliance.

25 Q. Let's take a look at a permit shield. Let's go to the

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1 John Sevier permit which is 190. And I apologize for skipping
2 around a little bit, but these are pages I want to look at.
3 This is TVA's Exhibit Number 190.

4 A. Okay.

5 Q. If you go to the ninth page of that exhibit, I believe
6 you'll find the permit shield. And it will be on your screen
7 as well on the bottom of the page.

8 A. Okay.

9 Q. Now, this permit shield appears to have two prerequisites
10 to activate the shield. The first one appears to be that
11 "such applicable provisions are included and are specifically
12 identified in this permit;" is that correct?

13 A. That's correct.

14 Q. And the second prerequisite is that the "technical
15 secretary has, in acting on this original permit application
16 as of August 22, 1997, and any revision thereto, determined
17 that certain requirements specifically identified and listed
18 in Attachment 6 are not applicable to the source;" is that
19 correct?

20 A. That's correct.

21 Q. So what this says, correct me if I'm wrong, that if a
22 condition is listed in this permit, and you comply with that
23 permit, you're deemed to comply with the underlying law. Or
24 if there's a determination made within the permit that a
25 condition is not applicable, then that's something you don't

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1 have to worry about.

2 A. That is correct.

3 Q. Does the common law of nuisance appear anywhere in this
4 permit?

5 A. I'm not aware that it does.

6 Q. You're not -- excuse me, you're not aware that it does?

7 A. That is correct.

8 Q. So a permit shield is not applicable to the common law of
9 nuisance; is that correct?

10 A. The requirements in the permit, to the best of my
11 knowledge, are all restricted to air pollution requirements.
12 So yes, it would not address common law of nuisance.

13 Q. Let's go back to the Colbert permit. And again, I
14 apologize for jumping around, but I'd like to go to the
15 Colbert permit which is Defendant's Exhibit 186 and I'd like
16 to direct your attention to Page 6.

17 And I'm going to be referring to just a small piece of
18 this permit so it might not be necessary to go rooting through
19 the books because Gary can highlight it on the screen.

20 Now, here we find language with regard to the halt or
21 reduced condition; is that correct?

22 I believe it's the language right at the bottom of that
23 page.

24 A. Okay. Yes, I see that.

25 Q. And what does that language say?

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1 A. It says, "The permittee shall not use as a defense in an
2 enforcement action that maintaining compliance with conditions
3 of this permit would have required halting or reducing the
4 permitted activity."

5 Q. And is a similar condition included in all of your
6 permits?

7 A. I believe something similar to that would be included,
8 yes.

9 Q. And in each one of your permits, do you also have
10 language that's equivalent to something like this permit does
11 not convey any property rights of any sort or any inclusive
12 privilege?

13 A. That is common permit language, yes.

14 Q. Okay. Thank you. Now, TVA has known at least since 2002
15 that its emissions cross into North Carolina; is that correct?

16 A. That was -- that was certainly one of the conclusions of
17 the SAMI report in which TVA participated in that study.

18 Q. And TVA did participate in SAMI, correct?

19 A. Correct.

20 Q. Okay. And is it your understanding that EPA's program,
21 such as the NOx SIP call and the Clean Air Interstate Rule,
22 would have effective -- according to you, would have
23 effectively implemented the recommendations of SAMI?

24 A. Yes, I think I previously said the SIP call and CAIR
25 would have done that. Now, without CAIR, then, certainly

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1 other requirements such as regional haze, fine particulate and
2 ozone will accomplish the same thing.

3 Q. I want to talk a bit about your -- about TVA's compliance
4 history. In 1976 TVA had a dispute with the State of Kentucky
5 regarding permit requirements; is that right?

6 A. That is correct.

7 Q. And TVA's position in that dispute was that it did not
8 need to get permit -- to get a permit from the State of
9 Kentucky under the Clean Air Act Amendment and Kentucky SIP.

10 A. TVA's position, like all other federal agencies at that
11 time, was that the Clean Air Interstate Rule did not require
12 federal agencies to obtain state permits. So although as a
13 federal agency we were not required to obtain the permits, we
14 certainly cooperated with our regulators. We submitted the
15 permit applications so that they would have all the
16 information.

17 Q. Now, TVA took that case to the U.S. Supreme Court and won
18 a judgment from the U.S. Supreme Court in that case, right?

19 A. Yes.

20 Q. And within months Congress passed new legislation
21 reversing that case so you would have to get permits.

22 A. That's true. Subsequently the Clean Air Act was amended
23 to require all federal agencies to obtain state permits.

24 Q. And your testimony was just that despite the fact that
25 you didn't need to get a permit, you would cooperate and

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1 comply with state laws regardless of whether you had a permit
2 or not.

3 A. That's correct.

4 Q. Now, in the late '70s, TVA admitted to being in violation
5 of numerous SIP limits at its various facilities and signed
6 two consent decrees to that effect, correct?

7 A. In the late '70s there were disagreements between TVA and
8 the states in terms of what ultimately was required to be met.

9 Q. Now, the SIPs included certain limits for emissions for
10 different pollutants, correct?

11 A. That is correct.

12 Q. And TVA was not in compliance with those limits, right?

13 A. TVA did not meet -- at that time did not meet those
14 emission limitations and the purpose of the consent decree was
15 to put TVA on an enforcement schedule to meet those limits.

16 Q. And TVA was not -- there was -- excuse me, there was a
17 consent decree with regard to the Alabama facilities, and in
18 that consent decree TVA admitted to noncompliance with SO₂
19 limits at the Colbert and Widows Creek facilities.

20 A. It was similar to the Kentucky decree.

21 Q. And in the Kentucky consent decree, TVA conceded to
22 violations of SO₂ limits at its Allen, Cumberland, Gallatin,
23 Kingston, John Sevier, Paradise -- excuse me, Johnsonville,
24 Paradise, and Shawnee plants, correct?

25 A. Actually, that was -- of course, most of those plants are

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1 in Tennessee. Actually, that was for both Kentucky and
2 Tennessee were combined together.

3 Q. But there were court cases in Kentucky and Tennessee and
4 there was a combined consent decree.

5 A. That's correct.

6 Q. And as a result of that consent decree, TVA scrubbed
7 units at Paradise and Widows Creek.

8 A. We already had a scrubber in one of our units at Widows
9 Creek. We installed an additional scrubber on unit 7 at
10 Widows Creek and units 1 and 2 at Paradise. In addition -- in
11 addition to that, we made fuel switches to lower SO₂ emissions
12 at other plants.

13 Q. And the fuel switches were made in order to comply with
14 those consent decrees.

15 A. That is correct.

16 Q. And the Alabama consent decree required a scrubber on the
17 unit -- on units 7 and 8.

18 A. That is correct.

19 Q. And TVA was required to start construction on that
20 scrubber on November 1st, 1978.

21 A. I don't personally remember that exact date, but that
22 does sound like approximately the correct time.

23 Q. And TVA was required to complete that construction on
24 March 1st of 1981.

25 A. Again, I can't recall the exact date, but that does sound

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1 like a reasonable time.

2 Q. So in the late 1970s, pursuant to a consent decree, which
3 is a court order, EPA was required to construct a scrubber on
4 unit 7 within a span of about two and a half years.

5 Excuse me, I believe I said EPA. I meant TVA.

6 A. Yes.

7 Q. So TVA was required to construct a scrubber in the span
8 of two and a half years back in the late 1970s.

9 A. I don't recall at that time how much work had already
10 been started. I'm not sure -- we really were starting from
11 scratch so I really do not know how long it actually took to
12 construct that scrubber.

13 Q. I'm not talking about how long it actually took. I'm
14 talking about the requirements that the court issued.

15 A. I guess -- what I'm saying is in terms of design and
16 planning, I don't know if any of that had actually started
17 before the consent decree. I suspect some of it had. So I
18 don't know that you could use those two dates to say that you
19 could start from ground zero, no work, and build a scrubber in
20 two and a half years.

21 Q. Now, the rates that were involved in that consent decree
22 for various plants were included in your permits. The SO₂
23 emissions were included in your permits for TVA?

24 A. That's correct.

25 Q. And in large measure, the emissions rates for SO₂ have

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1 not changed since that time; isn't that correct?

2 A. In most cases, yes, that would be correct.

3 Q. So the permit limits in TVA's permits are essentially the
4 permit limits for most cases that were permit limits from the
5 1970s.

6 A. The permit limits in the consent decree, and then, of
7 course, ultimately the permits, were those limits that through
8 modeling were determined to be necessary to protect the
9 ambient standards which had been designed to protect public
10 health with an adequate margin of safety. Those ambient SO₂
11 standards have not changed since that time. So therefore, the
12 emission standards that were established to meet those ambient
13 standards, there would be no reason to change those.

14 Q. But we don't use standards now for PM, correct?

15 A. The emissions standards in the permits were set up to
16 meet the SO₂ standards, the ambient SO₂ standards.

17 Q. So are you saying that you have no emissions limits set
18 up in your permits to meet PM ambient standards?

19 A. That is correct. That's really something that is -- will
20 be subject to -- now that we don't have CAIR, that will be
21 subject to future SIP revisions and potentially ultimately
22 changes in permits.

23 Q. And that SIP process really hasn't gotten underway yet,
24 has it?

25 A. The final regulatory process has not been completed.

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1 Q. And that consent -- those consent decrees were required
2 to be fully implemented by 1983, right?

3 A. Again, I can't remember the exact date, but that does
4 sound -- 1983 does sound probably correct.

5 Q. Okay. All right. We're going to move forward two years
6 and I'm going to skip over the EPA New Source Review case. I
7 think we covered that adequately yesterday.

8 There is, however, a citizen suit pending with regard --
9 or was a citizens suit pending with regard to the Colbert
10 facility with regard to NSR violations; is that right?

11 A. I'm sorry, what kind of violations?

12 Q. New Source Review at the Colbert facility.

13 A. There is no current pending lawsuit regarding NSR at
14 Colbert.

15 Q. There was a case filed, though, was there not?

16 A. There was a case, yes. That has been -- that has been
17 resolved in TVA's favor.

18 Q. And it was dismissed on statute of limitations and
19 jurisdictional grounds, right?

20 A. I believe that's correct.

21 Q. So there was no determination whether TVA was in
22 compliance or not.

23 A. I believe that is correct.

24 Q. And it was dismissed in January -- it was dismissed by
25 the district court in January of 2006.

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1 A. Again, I don't remember the exact date, but that sounds
2 approximately correct.

3 Q. And it was after that time that TVA changed its plans for
4 the Colbert scrubber and moved that scrubber back on its
5 plans; is that correct?

6 A. At that time, of course, saying TVA moved the Colbert
7 schedule back really tells half the story. The other half is
8 TVA moved its scrubber at John Sevier up. Essentially those
9 two scrubbers were swapped in the schedule.

10 Q. There was also a case brought with regard to the Colbert
11 facility that had to do with opacity; is that right?

12 A. That is correct.

13 Q. And that case was decided less than a year ago.

14 A. There is not yet a final resolution of that case.

15 Q. There is not a final resolution?

16 A. No, there is not.

17 Q. Is it not true that the federal district court found that
18 TVA committed 3,389 violations of the opacity standard?

19 A. In the district court TVA was determined to be in
20 compliance based on their long-standing interpretation of the
21 Alabama regulations, and that was supported by the State of
22 Alabama.

23 The case was appealed to the circuit court and the
24 circuit court ruled that because -- Alabama had adopted
25 regulations to modify their standard to be consistent with

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1 their long-standing interpretation; however, it had not yet
2 been approved by EPA. So because it was not an EPA-approved
3 regulation, the circuit court basically sent the case back to
4 the district court to determine appropriate actions to be
5 taken. And that has not yet happened.

6 Q. And are you aware that there was an order entered by the
7 district court on August 27, 2007?

8 A. Probably so. Can you refresh my memory on that?

9 Q. I will be happy to. I'd like to show you what's been
10 marked as Plaintiff's Exhibit 363. It will come up on your
11 screen.

12 And the third line -- does this appear to be an order in
13 the case regarding the Sierra Club and Alabama Environmental
14 Council, Incorporated versus the Tennessee Valley Authority?

15 A. That is correct.

16 Q. Now, starting on the third line after the word "granted,"
17 does it or does it not read, "Judgment will be entered in
18 favor of Sierra Club against TVA for the following violations
19 of the Clean Air Act."

20 A. That is correct.

21 Q. And those violations are listed slightly after that where
22 it says, "Colbert 1 through 4, 2,351 separate six minute
23 violations; 784 greater than 20 percent and less than
24 25 percent; 1,567 greater than 25 percent opacity." Is that
25 what it says?

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1 A. That is correct.

2 Q. And it says, "For Colbert 5, 1,038 separate six minute
3 violations; 541 greater than 20 percent and less than
4 25 percent; 497 greater than 25 percent." Is that what it
5 says?

6 A. That is correct.

7 Q. So I'll ask you again, is it true that the Tennessee
8 Valley Authority has been found to be in violation of the
9 Clean Air Act in excess of 3,000 occasions at the Colbert
10 facility?

11 A. That is what this order says. I was referring to the
12 fact that this case has not been totally resolved. I was
13 really talking about the next part that goes on and says that
14 TVA prepares and files with the court a plan for reducing
15 emission -- for reducing opacity, and that has been submitted
16 but the court has not yet acted on it.

17 Q. So TVA was required to submit a plan to come into -- to
18 show that it can comply with opacity regulations at the
19 Colbert plant. Is that what you're referring to?

20 A. That's correct.

21 Q. But that doesn't affect in any way the fact that the
22 court was found -- found TVA to be in violation on 3,000
23 separate occasions.

24 A. That is correct.

25 Q. And the span in which those violations occurred is also

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1 indicated in the order where it says in the fifth line that
2 the violations occurred between January 3, 2000, and
3 September 30th, 2002; is that correct?

4 A. That is correct.

5 Q. So 3,389 violations occurred in a span of less than three
6 years it seems like.

7 A. That is correct. And certainly, since that time, and
8 really, even before that time, TVA had begun taking actions to
9 improve our compliance record. For example, last quarter for
10 three months during -- of course, during the quarter we had no
11 exceedances on Colbert unit 5 and we had only five exceedances
12 on Colbert units 1 through 4. So we have certainly made
13 considerable progress in terms of improving the operations at
14 Colbert.

15 Q. But during this period from January 3rd, 2000, to
16 September 30th, 2002, TVA averaged over a thousand violations
17 a year at the Colbert facility.

18 A. That's correct. Based on the past order we're averaging
19 approximately 20.

20 Q. Now, you indicated that you have Title V permits that
21 require you to periodically certify that you're in compliance,
22 correct?

23 A. That is correct.

24 Q. And one of those provisions of the permit is the opacity
25 limits, right?

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1 A. That is correct.

2 Q. And essentially, what you have been doing in a lot of the
3 cases is submitting your opacity data to the Tennessee
4 Department of Environmental Conservation and they write you a
5 letter back that says they believe that you're operating the
6 plant well; and then on that basis you certify that you're in
7 compliance with the opacity standards; is that right?

8 A. Not exactly. In Tennessee, for six of our seven plants,
9 the official compliance method is Method 9, visual readings.
10 And opacity monitors COMs and are only used as an indicator of
11 good operation and maintenance.

12 So in those plants in Tennessee, at our annual
13 certifications we certify that we have met the opacity
14 standard based on the designated method, which is Method 9.
15 And that based on COMs, we have used that to show that we
16 demonstrate good operation and maintenance.

17 Q. Mr. Park, can you describe what you mean by both Method 9
18 and COMs?

19 A. COMs is a continuous monitor that's installed in the
20 stack to read the opacity in the stack. Method 9 is a method
21 used where a certified observer looks at the plume and
22 determines the opacity.

23 Q. And Method 9 compliance tests, how frequently are those
24 performed?

25 A. As required by the Tennessee permits, they're done twice

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1 a year.

2 Q. And continuous opacity monitors monitor, well,
3 continuously, correct?

4 A. That's correct. And they're also -- that's why Tennessee
5 includes that provision, that they will be used as an
6 indicator to determine proper operation and maintenance. So
7 essentially, we have the COMs data that shows on an ongoing
8 basis we're properly operating and maintaining our plants.
9 And then twice a year we get the official data which
10 demonstrates that we are in compliance.

11 Q. Violations that were found at Colbert were found based on
12 COMs, not Method 9.

13 A. That is correct.

14 Q. Several of your permits in Tennessee also require the use
15 of COMs, but they've been recently changed to specify only
16 Method 9, right?

17 A. That's correct.

18 Q. But you still have one -- at least one permit that
19 requires COMs certification?

20 A. We have one -- only one permit, the permit for our Bull
21 Run fossil plant, that currently requires COMs. It has not
22 yet been changed.

23 Q. And you're trying -- you're actively trying to get that
24 one changed back to Method 9, right?

25 A. That is correct.

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1 Q. And Method 9 is easier to comply with than COMs, isn't
2 it?

3 A. Method 9 is a more appropriate method. The initial
4 method was Method 9. And then when our permits were changed
5 to specify COMs which, of course, is a continuous method, it's
6 made the standard much more stringent. There have been court
7 cases that have agreed with that. And because of that
8 Tennessee is in the process of changing their rule to specify
9 that if COMs is used as the compliance method, that there
10 needs to be a minimum so that a certain -- you can have a
11 certain small number of exceedances for that standard.

12 Q. Yet, there is still one permit in Tennessee that uses
13 COMs for certification.

14 A. That is currently correct.

15 Q. And that's the Bull Run permit.

16 A. That is correct.

17 Q. And with regard to that permit, you're still under the
18 practice of submitting a letter -- or submitting your data to
19 TDAQ and they write a letter back to you, and then you certify
20 it based on that letter from TDAQ, correct?

21 A. Based on the letter from TDAQ, based on the fact that our
22 COMs data shows good operation and maintenance when we look at
23 the entire program, we do use that to certify compliance, that
24 is correct.

25 Q. And you're also aware that the Environmental Protection

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1 Agency disagrees with you that that's a proper method for
2 certification, right?

3 A. EPA has had various opinions on that. It's certainly
4 clear that their position is that compliance determinations
5 cannot be made essentially automatically in advance, but they
6 also have said very clearly that the state has the ability to
7 review the data. If there are exceedances, look at the
8 circumstances, and based on that review of the data, determine
9 whether a source is in compliance or not.

10 Q. There's an NSR case pending against your Bull Run
11 facility, isn't there?

12 A. That is correct.

13 Q. And that complaint was filed in February of 2001?

14 A. Again, I cannot remember that as an exact date, but that
15 does sound approximately correct.

16 Q. Okay. And TVA announced its plan to scrub the Bull Run
17 plant in 2002, right?

18 A. That does sound correct.

19 Q. And that case has gone to the Sixth Circuit United States
20 Court of Appeals wherein TVA lost.

21 A. I believe that is correct.

22 Q. That case is currently scheduled for trial before Judge
23 Varlan in Knoxville, Tennessee, beginning September 2nd at
24 9:00 a.m.; is that correct?

25 A. That is correct, it is, yes.

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1 Q. Mr. Park, are you aware of a recent report from the
2 Office of the Inspector General dated March 4, 2008, with
3 regard to an investigation at the Widows Creek facility?

4 A. Yes, I am.

5 Q. And in that report, isn't it true that the inspector
6 general found that TVA failed to report several leaks at the
7 Widows Creek facility?

8 A. That is what the report states, yes.

9 Q. That's -- and that's a fact, isn't it: TVA failed to
10 report several leaks?

11 A. That is correct. To put the case in -- the facts in
12 perspective, there were some leaks. This is an area that's --
13 historically it's not clear how it is regulated. We felt like
14 at the time that we were in compliance. We did not feel like
15 there were any reporting requirements.

16 With respect to reporting emissions, there are hundreds
17 of pages of very detailed regulations that specify exactly how
18 emissions are monitored and reported. We were -- we followed
19 all of those requirements. And as I said, we were not aware
20 that we had a reporting obligation.

21 Since then we understand the current interpretation of
22 the regulations and realize that if we have a situation like
23 that in the future, it should be reported. And we have
24 changed our procedures so that we monitor those types of
25 potential events much more closely. And in the future we

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1 would certainly report those to the regulators.

2 Q. That investigation was not done only by the Office of the
3 Inspector General of TVA, it was a joint investigation with
4 the Criminal Investigative Division of the Environmental
5 Protection Agency, was it not?

6 A. That is correct.

7 Q. And in that report, isn't it true that the TVA and Office
8 of the Inspector General referenced two previous duct leaks
9 that were investigated, one at the Cumberland fossil plant and
10 one at the Paradise plant, both of which were not reported?

11 A. That's correct.

12 Q. And the inspector general identified a lack of
13 transparent environmental reporting in that report.

14 A. That's the words that they used. As I said, really, this
15 is a -- was a kind of a new interpretation of regulatory
16 requirements. We were not aware that we had any need to
17 report. We have learned from that and we have changed our
18 procedures, and we're working very hard to be sure we do not
19 have any events like this that we'll have to report; but if we
20 do, we will certainly report them.

21 MR. BERNSTEIN: Your Honor, I'd like to show the
22 witness what's marked as Plaintiff's Exhibit 509.

23 THE COURT: All right.

24 Q. Mr. Park, Page 2 of this report at the top indicates that
25 comments from -- by employees at the Widows Creek facility

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1 interviewed showed that the leaks became progressively worse
2 and were "extensive," does it not?

3 A. That is correct. And really, that's kind of a follow-up
4 of what's on Page 1 and it really talks about the
5 circumstances. As part of installing SCRs, one of the
6 associated things that goes along with that is more of the
7 sulfur dioxide and the flue gas gets converted to SO₃ which
8 is -- can be very corrosive to the ductwork. Because of that,
9 any potential leaks would deteriorate much more rapidly.

10 TVA, unfortunately, was in a position where we had
11 installed controls earlier -- we were kind of leading the
12 industry in installing controls and we learned an awful lot.
13 We learned how quickly this deterioration could occur as a
14 result of the -- installing the pollution control equipment.

15 So really, we kind of got caught by surprise. We didn't
16 realize it would occur that quickly. It caught up with us.
17 The rest of the industry has learned from that. They, along
18 with what TVA is doing now as part of SCRs and scrubbers, are
19 putting mitigative controls in with the projects to be sure we
20 don't get behind on these type of things.

21 Q. The Alabama Division of Environmental Management issued a
22 Notice of Violation with regard to these incidents.

23 A. Yes, they did.

24 Q. And EPA issued a Notice of Violation as well, correct?

25 A. That is correct.

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1 Q. And ultimately, TVA paid a \$100,000 civil penalty to the
2 Alabama Division of Environmental Management; right?

3 A. That is correct.

4 Q. And the EPA NOV is not yet resolved, right?

5 A. That is correct.

6 Q. And the inspector general found -- TVA's inspector
7 general found that TVA did not exhibit a standard of care
8 commensurate with applicable regulatory requirements; isn't
9 that correct? And that's on Page 4, Mr. Park, on the third
10 bullet point.

11 A. That is what the report says. And I think -- this is a
12 case where hindsight is a lot better than foresight. At the
13 time, as I said, this was an evolving regulatory requirement.
14 It's very easy to look back right now and say what we did was
15 not the best thing at the time. Certainly we weren't
16 considering that as a reporting requirement and therefore we
17 did what we did. We have learned from the regulators that in
18 the future, as I said, if we ever get in this situation, we
19 will treat it differently.

20 Q. In that same bullet point, sir, the Office of the
21 Inspector General found that TVA was not operating and
22 maintaining control equipment in a manner so as to minimize
23 emissions; isn't that right?

24 A. That is correct.

25 Q. On the next page, sir, under Observations, on the second

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1 bullet point, the TVA Inspector General found that the
2 emphasis was on efforts to contain the leaks while keeping the
3 plant operating until the next major outage. Isn't that
4 correct?

5 A. That is what the report says. Certainly we had made
6 plans to do extensive repairs to this unit. Several days
7 after the regulatory inspection, a unit did come down for that
8 scheduled outage and the repairs were made.

9 Q. And TVA has a permit with regard to this facility and it
10 has a provision to the effect that we saw before, that halting
11 or reducing -- the need to halt or reduce operations is not a
12 defense to a violation; is that correct?

13 A. That is correct.

14 Q. And would the fact that the emphasis was on efforts to
15 contain the leaks while keeping the plant operating, that's
16 not consistent with that provision, is it?

17 A. Again, at the time this occurred, we were looking at this
18 more as a maintenance issue as opposed to a compliance issue
19 as this report also points out and that's why we continued to
20 operate. Clearly today if something like that happened, we
21 would -- first of all, I don't think it will happen again; but
22 if it did, we would clearly be in a position that we
23 understand the regulatory requirements such that we would have
24 to take the unit off to fix the problem.

25 Q. But the State of Alabama took a different view and they

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1 fined you \$100,000

2 A. They fined us \$100,000, that is correct.

3 Q. And in fact, what this report indicates that in spite of
4 the continuous nature and extent of the leaks, it appears that
5 little, if any, consideration was given to reporting the leaks
6 to the Alabama Division of Environmental Management.

7 A. As I said, we really did not feel like we had a
8 requirement to report this, and once the NOV was issued, we
9 looked at it in great detail, coordinated with our attorneys.
10 As I said before, the -- they're very detailed regulatory
11 requirements that specify how emissions are supposed to be
12 monitored and reported. These regulations are hundreds of
13 pages long. We looked through those hundreds of pages long
14 regulations and we concluded that we followed every
15 requirement and we did not feel like we had a reporting
16 requirement. As I've also said, going forward, if something
17 like this ever occurred again, we would report it.

18 Q. I want to ask you just one more question about this.
19 Under Observations under the third bullet point which you'll
20 see on your screen, correct me if I'm wrong, but it seems like
21 these duct leaks were reported on May 27, 2004, but the
22 ductwork was not ordered until June 2005, over a year later.

23 A. This was a -- really a problem of -- we would do an
24 inspection. We would find some problems. We corrected those
25 problems. Later on we would do another inspection. We would

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1 find additional problems. And then finally, we got to the
2 point where we ordered equipment to make an extensive
3 rehabilitation of that ductwork. But certainly, during this
4 entire period there was extensive work going on as these leaks
5 would occur. The equipment was in such condition because of
6 the rapid deterioration caused by the control equipment that
7 had been installed that we would fix one area and then once it
8 got fixed, then we'd have problems with another area. So it
9 was a continual problem of fixing these leaks.

10 MR. BERNSTEIN: Your Honor, we'd like to offer into
11 evidence Plaintiff's Exhibit 509 and 363.

12 THE COURT: All right. Let those be admitted.

13 (Plaintiff's Exhibits Numbers 363 and 509 were
14 received into evidence.)

15 Q. Mr. Park, I'd like to talk to you a little bit about the
16 emissions history for TVA. Actually, the control history of
17 TVA.

18 Following installation of controls on TVA facilities
19 subject to the consent decrees in the late '70s and early
20 '80s, TVA did not expend any significant amount of capital
21 costs with regard to controls until the mid '90s; is that
22 correct?

23 A. With the consent decree, TVA came fully in compliance
24 with all regulatory requirements. There was a gap of a number
25 of years, then, before additional requirements became

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1 effective. So yes, during that time period there were no
2 extensive additions of control equipment because none were
3 required.

4 Q. And in the early '90s TVA put low NOx burners on several
5 facilities because that was the technology that was needed to
6 comply with Title IV.

7 A. That is correct.

8 Q. And TVA put scrubbers on Cumberland because that was
9 needed to comply with Title IV.

10 A. That is correct.

11 Q. And TVA changed to lower sulfur coals at some facilities
12 because that was needed to comply with Title IV.

13 A. That is correct.

14 Q. Mr. Park, do you know what TVA's Title IV annual
15 allocation was for the years 2000 through 2006?

16 A. I believe it's right -- over 400,000 tons. Probably
17 closer to 440,000 tons, best of my recollection.

18 Q. Mr. Park, I'd like to show you what's marked as
19 Plaintiff's Exhibit 444. And these are Defendant Tennessee
20 Valley Authority Responses to Plaintiff's First Set of
21 Interrogatories to Defendant. I'd like to refer you to Page
22 29.

23 Mr. Park, does this refresh your recollection as to the
24 annual Title IV SO₂ allocation for TVA for the years 2000
25 through 2006?

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1 A. Yes. It says 430,133. So that's close to what I said.

2 Q. And were you here before when Mr. Myers testified that
3 for each of the years between 2000 and 2006, TVA's emissions
4 exceeded 430,000 per year?

5 A. Yes, I was. Of course, also, one of the things, of
6 course, that was discussed in his testimony that in terms of
7 emission reductions, earlier reductions are better. One of
8 the reasons that during this time period between 2000 and 2006
9 TVA was emitting more than 400,000 -- 430,000 tons is because
10 we reduced emissions early. We installed our scrubbers at
11 Cumberland early. That allowed us to build up a large bank of
12 SO₂. And that has helped us so that we don't have to reduce
13 quite as much now. Of course, as I said, that's --
14 environmentally, it's a lot better to reduce earlier. So I
15 look at that as a very positive thing for the environment.

16 Q. Mr. Park, are you familiar with the Memorandum of
17 Undertaking that Mr. Myers referenced before you with regard
18 to NOx reductions?

19 A. Yes.

20 Q. And do you recall the -- and those were -- Mr. Myers
21 indicated that those were early reductions.

22 A. As far as the SIP call, basically, we did -- we've done
23 several things. First of all, unlike most utilities that
24 would install controls, only run them -- obviously, we had a
25 deadline. We had to have all our controls installed by the

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1 beginning of the Ozone Season 2004. In order to meet that
2 deadline, we had to space those controls out over about a
3 three-year period. Most utilities took the approach of
4 building controls. They would test them to be sure they
5 operated and then discontinued operation because of the
6 expense of operating.

7 TVA, once our controls were built, we put them in
8 operation and continued to operate them even before the
9 regulatory requirements of the ozone season. Also, we have
10 operated the last several years at the request of the State of
11 Tennessee and other groups, we have operated early, a month or
12 so early before the ozone season because of concerns over the
13 emissions.

14 Q. With regard to the Memorandum of Undertaking, the years
15 that that memorandum covered were 2002 to 2004. Is that your
16 recollection?

17 A. I believe that is correct, yes.

18 Q. And the bulk of the early emissions reductions cited in
19 that document occurred in 2004.

20 A. I really do not recall on a year-by-year basis when --
21 what reductions we had.

22 Q. That would seem logical, though, wouldn't it?

23 A. Well, certainly over time we installed more controls so
24 every year we would have had more and more reductions.

25 Q. Isn't it true that the NOx SIP call required controls in

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1 the year 2004? So those reductions weren't early at all.

2 A. The -- in 2004, as I recall, the SIP call did not come
3 into effect. It was really only for four months. So we had
4 the month of May was really not part of the SIP call
5 requirements. So we were operating at least that one month
6 early in 2004 because it was not required by the SIP call.

7 MR. BERNSTEIN: No further questions.

8 MS. GILLEN: Your Honor, I just have a few short
9 questions.

10 THE COURT: All right.

11 REDIRECT EXAMINATION

12 BY MS. GILLEN:

13 Q. Mr. Park, I'd like to talk about the duct leaks that
14 Mr. Bernstein talked about at Widows Creek. Would that be an
15 example of the process you described in your direct
16 examination that the way that TVA responds to notices of
17 violation, working with the state, addressing the issue and
18 remedying the problem?

19 A. Yes, that's a very good example. As I indicated,
20 certainly we have periodic failures, either a failure of our
21 equipment or somebody makes a mistake. In this case it was
22 really a combination of a failure of equipment and really not
23 a clear understanding of how the regulators viewed this. We
24 thought what we were doing was okay. We subsequently learned
25 it was not. So we did two things. We increased our efforts

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1 to better maintain our equipment. We also changed our
2 procedures in terms of how frequently we inspect this
3 equipment. Some of our plants inspect the equipment for these
4 type of problems as much as twice a day so we're sure that we
5 don't have these problems because they can come up fairly
6 quickly. If they -- we do have any minor leaks, we promptly
7 repair them.

8 So yes, that's a very good example of how we have changed
9 our program to be sure we adequately address these issues.

10 Q. And turning briefly to the New Source Review citizens
11 suit that involves the Bull Run fossil plant that
12 Mr. Bernstein addressed.

13 A. Yes.

14 Q. You are aware that the Sixth Circuit reversed the
15 dismissal by the district court of the case on statute of
16 limitations ground, but did not reach or address the issue of
17 whether the New Source Review rules had been violated, are you
18 not?

19 A. That is correct.

20 Q. And finally to the issue of opacity. Mr. Park, is there
21 a relationship between sulfur dioxide emissions from plants
22 and opacity?

23 A. No. Sulfur dioxide is a -- it's a colorless gas so it
24 is -- the opacity monitor will not see SO₂. They're totally
25 two different things. Matter of fact, opacity is not even

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1 considered a pollutant.

2 Q. And isn't it true that a federal district court judge in
3 the Northern District of Alabama is overseeing the citizens
4 suit concerning -- concerning the opacity issues that
5 Mr. Bernstein addressed?

6 A. That is correct.

7 Q. And what is the base opacity standard in the three states
8 in which TVA operates?

9 A. It is 20 percent opacity. Opacity ranges from a low of
10 zero to a hundred percent. Essentially, if it's zero opacity,
11 that would be like the air in this room. Totally clear. A
12 hundred percent is if you just have smoke, you cannot see
13 through it at all. So our -- for all of our plants, our
14 opacity is 20 percent.

15 Q. And where does that standard -- how does that standard
16 compare to standards in the southeast?

17 A. For existing sources it's as low or lower than any of
18 them. Many of the existing sources in the southeast have
19 opacity standards of 40 percent.

20 Q. Do you know what the opacity limit is in North Carolina?

21 A. For existing sources it's 40 percent, plus there's also a
22 provision that the standard can be exceeded up to eight-tenths
23 of a percent of the time during a quarter.

24 Q. Is a 20 percent opacity standard which governs the TVA
25 plants more stringent than a 40 percent opacity standard that

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1 governs the plants in North Carolina?

2 A. Much, much more stringent. As it turns out, most opacity
3 exceedances that we have are barely above 20 percent. So if
4 we had a 40 percent standard, we'd have essentially no
5 exceedances.

6 MS. GILLEN: Thank you, Mr. Park.

7 MR. BERNSTEIN: One question.

8 THE COURT: All right.

9 RECROSS EXAMINATION

10 BY MR. BERNSTEIN:

11 Q. Mr. Park, is there a relationship between opacity and
12 emissions of particulate matter?

13 A. There is not a direct correlation between opacity and
14 particulate. Certainly as particulate increases, opacity
15 would increase. But you cannot draw a direct correlation
16 between the two.

17 MR. BERNSTEIN: Thank you.

18 Nothing further, Your Honor.

19 MS. GILLEN: Nothing further, Your Honor.

20 THE COURT: All right. Thank you, sir. That will
21 complete your testimony and you may be excused.

22 THE WITNESS: Thank you.

23 (Witness stepped down.)

24 THE COURT: All right. Call your next witness,
25 Mr. Lancaster.

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1 MR. LANCASTER: TVA calls as its next witness
2 Mr. Ron Nash.

3 THE COURT: All right.

4 MR. GOODSTEIN: Your Honor, North Carolina had a
5 motion in limine that we filed with regard to Mr. Nash's
6 testimony, but I'm told by counsel that he's going to be
7 presented as a fact witness. So I think we can just proceed
8 along those lines if that's -- if my understanding is correct.

9 MR. LANCASTER: That's quite correct, Your Honor.

10 As we indicated in our response to the motion, most
11 of Mr. Nash's testimony is factual. He is the TVA official
12 who was responsible for overseeing the construction of the
13 SCRs on 21 of TVA's units and is currently overseeing the
14 construction of the scrubbers at the Bull Run and Kingston
15 plants in eastern Tennessee. Most of his testimony will
16 describe his experiences and will describe the construction
17 process for an SCR and a scrubber.

18 However, Mr. Nash will also address the issue of his
19 concerns over building the large number of scrubbers that
20 Dr. Staudt specified in approximately four years. We believe
21 that that is testimony that he will be fully qualified to give
22 as an expert based on his years of construction and experience
23 in managing construction of pollution controls. And he
24 satisfied all requirements for expert testimony. He filed a
25 report -- excuse me, he provided a report. He was disclosed

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1 as an expert. He has been disclosed as an expert in the
2 pretrial filings. That is only a very small portion of his
3 testimony, and we believe it will not actually cross the line
4 into expert testimony; but if it did, we believe he's
5 qualified to address that.

6 And furthermore, we would note that the plaintiff
7 has opened the door to this testimony because Dr. Staudt
8 referred extensively to Mr. Nash's reports and has already
9 provided his response to them.

10 THE COURT: All right. I'll rule on the objections
11 as they're made.

12 MR. LANCASTER: Thank you, Your Honor.

13 MR. GOODSTEIN: Thank you, Your Honor.

14 THE COURT: All right. Come around and be sworn.

15 RONALD DAVID NASH,

16 being first duly sworn, was examined and testified as follows:

17 DIRECT EXAMINATION

18 BY MR. LANCASTER:

19 Q. Would you please state your full name for the record.

20 A. Ronald David Nash.

21 Q. Where do you live, Mr. Nash?

22 A. Chattanooga, Tennessee. Signal Mountain.

23 Q. And where are you employed?

24 A. Tennessee Valley Authority in Chattanooga.

25 Q. What is your position at TVA?

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1 A. I'm a Senior Manager in the Fossil Power Group
2 responsible for the implementation of TVA's scrubber program.

3 Q. And do you have any education in the construction
4 management field?

5 A. Yes. I graduated from the Ohio State University in 1971
6 with a construction management major. I also attended the
7 Executive Construction Program for Texas A&M in 1987.

8 Q. And do you have any years of experience in the
9 construction management field?

10 A. I've worked in the construction field my entire career.

11 Q. And how many years would that be?

12 A. Be 37 since I graduated.

13 Q. And you came to TVA in about 1993; is that correct?

14 A. That's correct.

15 Q. And before that, did you work at another organization in
16 construction management?

17 A. Worked for several, but for almost 20 years with a
18 construction company, the Blount Brothers Construction Company
19 that later was absorbed into a corporate Blount, Incorporated.

20 Q. And when you were at Blount Brothers, did you have any
21 experience building power plants?

22 A. Yes. The first project that I worked on for Blount was
23 for the construction management of two 400-megawatt coal-fired
24 power plants that included scrubbers for the Columbus and
25 Southern Ohio Electric Company in Conesville, Ohio.

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1 Q. And at TVA how long have you been involved in pollution
2 control construction?

3 A. Well, actually, since I started with TVA in '93 as the
4 Manager for the Modifications and Maintenance Partnerships.
5 We were responsible for installing the low NOx burners that
6 several of the -- of my cohorts have testified about
7 previously. And since then was responsible for installing all
8 21 selective catalytic reduction projects. And I'm currently
9 responsible for TVA's scrubber program.

10 Q. And based on your experience overseeing the construction
11 of SCRs at 21 of TVA's units, could you describe for the court
12 what is involved in retrofitting a power plant with an SCR.
13 That's for NOx control, correct?

14 A. That's correct. No two of the projects are alike. It's
15 not simply a cookie cutter. I think Mr. Myers testified the
16 plants were not constructed with these projects in mind to
17 come in later on.

18 In order for the process to work effectively, you have to
19 maintain temperatures above 600 degrees which requires you to
20 close-couple these vessels to the boiler. So you -- there's
21 quite a bit of demolition and movement and modification
22 required to install the foundations, support steel, the large
23 absorber vessel that will hold the catalyst and then the
24 ductwork to get the flue gas from the economizer outlet
25 through the SCR and then back into the flue gas train ahead of

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1 the air preheaters.

2 Q. And what types of workers are involved in building an
3 SCR?

4 A. Well, all the basic construction trades, but
5 predominantly boilermakers. Boilermakers, iron workers,
6 electricians, and then a smattering of most of the other major
7 trades, also.

8 Q. And what is a boilermaker?

9 A. A boilermaker is a craftsman that's skilled in all
10 aspects of the metal trades, in cutting, welding, rigging,
11 heavy rigging. Anything required in the construction or
12 modification of a power plant.

13 Q. In your experience, what kind of time period is involved
14 in the design and construction of an SCR?

15 A. Well, again, none of them are very typical. We spent as
16 much as four and a half years, I think, on the Bull Run
17 project. But typically, I think we've averaged probably three
18 years as an average for all 21 SCRs.

19 Q. And currently you are overseeing the construction of the
20 scrubbers at TVA's Bull Run and Kingston plant at all ten
21 units of those plants in eastern Tennessee for sulfur dioxide
22 removal, correct?

23 A. That's correct.

24 Q. And is building a scrubber a pretty significant
25 undertaking?

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RONALD NASH - DIRECT

1 A. Maybe more complicated than the SCR's. I thought that was
2 complicated and these are proving to be just as -- just as
3 challenging.

4 Q. There's been description by some witnesses that it's
5 basically like building a chemical plant next to the power
6 plant; is that correct?

7 A. That's precisely what it is. We're building a large -- a
8 large facility that's going to create chemical reaction to
9 remove the SO₂.

10 Q. And I'm going to put on the monitor what's been marked as
11 Defendant's Exhibit 220.

12 Q. And is that a schematic that describes the components
13 that are involved when a scrubber is built?

14 A. Yes, it does. Everything to the right of the existing
15 stack encompasses all the components of a new scrubber.

16 Q. And what components are those?

17 A. Well, typically starts with a booster fan. We're adding
18 quite a pressure drop to the system, and we have to overcome
19 that with additional fan capacity.

20 Very large absorber vessel where the reaction is going to
21 take place where we introduce the flue gas to the limestone
22 slurry.

23 We've got -- obviously need processed water, that you see
24 these treated water storage tanks and treated water pumps.

25 Oxidation air blowers are required to help support the

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1 reaction. You have to have an excess amount of oxygen present
2 for the reaction to work.

3 Obviously, we have a very wet plume when we come out of
4 the scrubber and so it requires a new wet stack.

5 Over to the right you can see the limestone system. This
6 particular description shows receiving limestone rock. Comes
7 through a surge bin, through a ball mill where it's crushed to
8 a very fine powder, mixed in a slurry tank and then fed into
9 the absorber vessel.

10 And then obviously, the effluent then comes out of the
11 absorber vessel through the absorber bleed pumps and out to
12 the effluent storage ponds.

13 Q. And so a scrubber is not simply one building, is it?

14 A. No, it's quite a complex amount of equipment, buildings,
15 storage ponds, stacks.

16 Q. And what sorts of workers are involved in the building of
17 a scrubber?

18 A. Well, very similar to the SCR. It's maybe not quite as
19 boilermaker intensive, but we're using alloy vessels and those
20 are erected by the boilermakers. Requires all the other
21 typical trades to install the concrete, carpenters. Requires
22 quite a bit of support from pipefitters and electricians.

23 Q. And what sorts of materials and equipment are involved in
24 building a scrubber?

25 A. Well, most of the equipment is depicted here on the

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1 schematic. The recycle pumps are some of the largest pumps
2 required. Fans are also a very major component. The absorber
3 vessels themselves are probably the single -- besides the
4 stack, the single biggest feature of the project. Our process
5 requires them to be made out of alloy steels, high grade
6 stainless steels. And then the effluent ponds themselves are
7 just major earth work projects where we have to provide a
8 storage facility for upwards of 30 years of storage of
9 byproduct.

10 Q. Is it typical to have to bring a special crane on site?

11 A. It depends. In most cases, you know, we've had an
12 occasion to use larger cranes even on the SCRs. Both the
13 Allen plant and Cumberland plant required a thousand ton crane
14 just to erect those particular projects.

15 The scrubber projects, not quite as long a crane but more
16 of them. We've got three 500-ton cranes in operation over at
17 the Kingston plant as we speak.

18 Q. And in your experience, what sort of time does it take to
19 do the design and construction of a scrubber?

20 A. Typically we -- the three projects that I've been
21 involved with are all averaging right around five years.
22 Pretty typical to see a three-year construction period.
23 That's preceded by a year of detailed design. And that's
24 typically preceded by a year of conceptual engineering. So
25 all in total, five years.

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1 Q. Are there any special permitting requirements that you
2 have experience with?

3 A. Well, absolutely. Mr. Parks' group facilitates us in
4 getting a whole myriad of permits. We're required to submit
5 to -- through the NEPA process in order to get permits to
6 build the facility. And the one that has turned out to be the
7 most problematic is getting the solid waste disposal permits
8 for what's depicted here as the effluent pond for the
9 long-term storage. That's typically taken up to three years
10 on average to secure those permits.

11 Q. And so these pollution controls, they can be as large or
12 larger than the power plant unit itself; is that correct?

13 A. Oh, very definitely. When you take them in combination
14 with the SCRs and precipitators, they dwarf the original
15 boiler turbine generator footprints.

16 MR. LANCASTER: Ms. Shea, if you would put 212 on
17 the monitor and zoom in on the picture.

18 Q. I'm showing you what's been marked as Defendant's Exhibit
19 212 and ask if you can describe for the judge what that is.

20 A. That's a side view of Paradise unit 3. Several of my
21 predecessors have talked about that project. It's an 1150
22 nameplate megawatt sized unit. The SCR is the -- the existing
23 unit is shown over here on the right. In the middle is the
24 SCR. Over on the left -- this picture is actually cut off and
25 you're only seeing a portion of the FGD here. What you're

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1 seeing is ductwork and the new booster fans. It doesn't even
2 go far enough to the left to pick up the new absorber
3 building.

4 Q. And so this -- at Paradise fossil plant, as an example,
5 at unit 3, the scrubber and the SCR are actually bigger than
6 the original power generating unit, correct?

7 A. Quite a bit.

8 Q. And in your work overseeing TVA's pollution control
9 construction programs, are you currently facing any challenges
10 in building scrubbers?

11 A. Just about every day. It starts with, you know, getting
12 the amount of engineering support, the qualified engineering
13 support that we need. We've got a contract that's a joint
14 venture partnership between URS, which is the largest -- one
15 of the largest or the largest engineering company in the
16 United States, and Mitsubishi Heavy Industries which has the
17 process for the particular scrubber process that we're
18 installing, and we're still finding challenges getting
19 qualified senior lead engineers to lead our design effort.
20 It's easier to get the younger engineers to support that
21 effort but finding the qualified lead engineers that have
22 scrubber design experience is becoming more and more
23 difficult.

24 We have difficulty getting the number of qualified
25 construction firms to bid our work. We're working on the

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1 third scrubber right now and in many cases we only get two
2 qualified bids to evaluate. So we're seeing the marketplace
3 just tighten up tremendously. Lead times are extending on
4 large motors, on switch gear. You know, those lead times are
5 well over a year once you complete the design and place the
6 order.

7 Obviously, we've got the challenge of just getting the
8 qualified craftsmen. We're building two major construction
9 projects within 35 miles of each other and we have problems
10 trying to man those projects and then man our maintenance
11 outages during spring and fall seasons that we have every year
12 to keep our plants operating.

13 Q. You mentioned the maintenance outage. Would you describe
14 for the court what that is.

15 A. Well, at various intervals, and typically we're going to
16 longer cycles, but every two or three years they typically
17 will take a unit, which is a boiler-turbine generator
18 combination, off-line to perform necessary routine repairs
19 that are required to keep it in operation. That typically
20 takes several hundred craftsmen and the predominant craft
21 required are boilermakers.

22 Q. So the boilermakers that are working on the construction
23 of scrubbers are also needed for regular plant maintenance
24 work at plants owned by TVA and others; is that correct?

25 MR. GOODSTEIN: Objection, form, Your Honor.

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1 THE COURT: Let me hear the question. Go ahead.

2 MR. LANCASTER: I asked -- I'm sorry, Your Honor,
3 did you ask me to repeat the question?

4 THE COURT: Yes.

5 Q. My question was are the boilermakers who are -- who work
6 on building scrubbers the same craft -- the same types of
7 workers are also needed and used in regular plant maintenance
8 work at TVA's plants and at other utilities' power plants; is
9 that correct?

10 A. That's correct.

11 MR. GOODSTEIN: Objection to form.

12 THE COURT: Overruled.

13 A. That's correct. Absolutely the same people. They come
14 out of the same local employment halls. One season they may
15 be working on our maintenance work. If they happen to be the
16 next on the out-of-work list, they could get sent to one of
17 the scrubber projects.

18 Q. What have you done to address these challenges and in
19 getting the controls built despite the challenges?

20 A. Well, we've done quite a few things that we think --
21 we've tried to minimize it. I would hesitate to say we've
22 overcome the problem, but we've tried to minimize it.

23 The first way that we did that was trying to sequence the
24 construction of the SCRs and scrubbers where we were never
25 trying to execute a scrubber and SCR project on a particular

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1 site at the same time. Just the amount of the logistics of
2 trying to get the number of folks on one site at one time we
3 thought would make things just impractical to get both
4 projects done on time.

5 We've resequenced our outages for our normal maintenance
6 so that we try to lower the peak of boilermakers required.
7 It's pushed outages out into our shoulder months on
8 generation. We typically like to take those units off-line
9 during the mild weather during the spring and fall. That's
10 the most opportune time, and that's when every other utility
11 is taking their units off-line and just drives the peak of
12 boilermakers to something that they have a very difficult time
13 supporting.

14 So what we do is take the smaller units and try to work
15 them in on the shoulder months. Not quite as economical for
16 us, but it's one of the few ways we've found to try to
17 minimize that peak.

18 The other way, just trying to work with long-term
19 partnerships like Advatech where we're using the same folks,
20 using the same design from plant to plant to where we have
21 consistency, where we can -- we also have the ability by using
22 them, if we need to, we can -- we can shift those resources to
23 our maintenance work.

24 Q. I'm going to ask you to look at something that is in
25 evidence as Plaintiff's Exhibit 54.

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1 Plaintiff's Exhibit 54 is a chart prepared by Dr. Staudt
2 outlining a program of building of pollution controls for TVA
3 that he indicated could and should be completed by January 1st
4 of 2013. Are you familiar with this?

5 A. Yes, I am.

6 Q. And what -- what quantity of scrubbers, what number of
7 units does Dr. Staudt suggest should have scrubbers built on
8 them before 2013?

9 A. Basically, every unit at TVA, obviously with the
10 exception of Shawnee unit 10 that's been talked about several
11 times previously. Obviously, we've got seven operating
12 scrubbers and under construction we've got ten more, so math
13 would leave 41 additional scrubber -- units to be scrubbed.

14 Q. How many units that do not all have SCR or SNCR for NOx
15 control does Dr. Staudt suggest should have such controls
16 built before 2013?

17 A. I believe the number was -- Dr. Staudt thought we needed
18 24 more SCRs and I think 14 SNCRs, if I'm not mistaken.

19 Q. All right. Now, do you have any concerns as the person
20 at TVA responsible for building pollution controls about
21 whether you would be able to actually complete the
22 construction of scrubbers on 41 units and SCRs and SNCRs on an
23 additional 30-plus units, all the design, procurement,
24 construction, testing and high end to be completed by
25 January 1st, 2013?

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1 A. Well, there's several. As I said earlier, you know, our
2 experience has been -- and that's been validated with several
3 meetings with my counterpart with Southern Company and others,
4 our typical 60-month, five-year overall project duration for
5 scrubbers is very typical of the industry. Obviously, we
6 don't have five years left before January 1st, 2013.

7 I think the bigger problem would be forcing us into
8 trying to execute the construction of both the SCRs and the
9 scrubbers on single sites at the same time. When we looked at
10 overlapping those two projects, just on the Colbert site alone
11 was going to require peak construction labor force of over a
12 thousand people. That site just is not -- would not
13 support -- the infrastructure there cannot support that level
14 of activity. Something has got to give and something is not
15 going to get done on time. That would be repeated at the four
16 other sites, at Allen, Gallatin, Shawnee. So I have some very
17 grave concerns about trying to complete it in that period of
18 time.

19 Q. Do you have concerns about finding qualified labor?

20 A. Well, we've been struggling trying to meet our
21 boilermaker needs for the last several years and that's at a
22 time period that everybody has predicted is well before the
23 peak which they say is being predicted to be around 2010.
24 We're having -- have had trouble, an increasing amount of
25 trouble in trying to just meet our current needs. Trying to

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1 double and triple the amount of construction work on top of
2 that just seems very impractical to me.

3 Q. I'd like to move now from the list of pollution controls
4 that the plaintiff has identified as a proposed remedy and ask
5 you about some of the TVA retrofit projects that are actually
6 underway right now. And the court has heard some testimony
7 about these already.

8 What is your role in the construction project for the
9 Bull Run plant in Knoxville, Tennessee?

10 A. Well, as I said, I'm the program manager responsible for
11 the scrubber program and as such I'm responsible for the
12 overall design, construction, startup and implementation of
13 that project.

14 Q. How many people have been involved in the construction of
15 that project?

16 A. I'll talk about that in two ways. As a peak work force,
17 we probably peaked around 250 craftsmen sometime last fall.
18 Currently we're down around 150 craftsmen as we speak. We've
19 spent over a million and a half man hours to date on that
20 project, including all the engineering hours that have been
21 expended.

22 Q. And what's the current status of the Bull Run scrubber
23 project?

24 A. We're pretty far along. The overall project is currently
25 94 percent. Construction itself is about 90 percent complete.

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1 Go into a little more detail about that. That's broken down.
2 We're essentially complete with the main absorber island and
3 all the associated equipment that you saw on the previous
4 schematic that we reviewed. We've started up and tested
5 almost all the equipment associated with the main scrubber
6 itself, process water pumps, the oxidation air blowers, the
7 instrument air compressors, the recycle pumps, the rotating --
8 air rotating spargers, effluent pumps, detention pond pumps.
9 All that has been started up and commissioned.

10 What we're focusing on right now is the preground
11 limestone system. If you recall, the schematic showed a ball
12 mill system where we actually crush limestone rock on site.
13 We've chosen to do a preground system on site where we have
14 that crushed off site, delivered by trucks, stored in silos
15 and we blow that into the absorber vessel to dry. So all the
16 equipment and facilities for that, that's the remaining piece
17 of the project that's left to be completed. That portion of
18 the project is approximately 90 percent complete. We're
19 commissioning -- we're starting up and bumping those first
20 motors on those blowers this week. All that is to support the
21 delivery -- first delivery of preground limestone on August
22 the 4th.

23 Q. And if you would look at Plaintiff's Exhibit -- excuse
24 me, Defendant's Exhibit 218 which is already in evidence, put
25 into evidence by the plaintiff.

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1 What is that?

2 A. This is an aerial view, probably taken from higher
3 elevation on the SCR, of the scrubber installation itself.
4 Over on the far right are the preground lime storage bins that
5 I just talked about. The buildings that you see, the largest
6 building houses the recycle pumps. It's right adjacent to the
7 absorber vessel itself.

8 The smaller lean-to structure off of that absorber
9 building is the forced oxidation air blower building where
10 those blowers are sitting along with the instrument air
11 compressors.

12 You see the ductwork here. You see both the inlet and
13 outlet duct and the new stack. The inlet duct to the scrubber
14 is shown coming in from the left-hand side. You can see some
15 of the insulation and lagging is still being installed. The
16 outlet duct itself coming out of the absorber is coming from
17 the other direction, from the right. It's an uninsulated
18 stainless steel ductwork.

19 Q. And does this photograph illustrate the construction of
20 the Bull Run scrubber is essentially complete?

21 A. Yeah, it's probably a few weeks old so progress is even a
22 little farther along than this. We've started the final
23 grading and roads at this point and so probably looks a lot
24 less cluttered than this right now.

25 Q. Okay. And what is the projected total cost of the Bull

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1 Run scrubber project?

2 A. Our current forecast is \$277 million.

3 Q. And how much of that has already been spent?

4 A. We're going at a pretty fast rate, but I think the report
5 through June showed that we had expended 225 million.

6 Q. And what is the plan for the date that the scrubber
7 should be operational?

8 A. We'll be operational when we come out of the outage. As
9 I discussed, we'll be completely done with everything that we
10 can do prior to the outage by the end of August. The unit
11 comes off-line for a maintenance outage on September the 20th.
12 It's a rather extended outage that will go through December
13 the 10th. We've got several work items that we have to
14 accomplish during that outage. And when the unit comes back
15 online after that outage is complete, they will be flowing
16 flue gas through the scrubber.

17 Q. All right. And so the scrubber will be tied in to the
18 power generating unit this fall.

19 A. That's correct.

20 Q. And is expecting to be operational before the end of the
21 year.

22 A. December the 10th, or sooner if they get their
23 maintenance work done sooner.

24 Q. As the TVA official responsible for the construction, are
25 you aware of any reason why the Bull Run scrubber will not be

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1 operational by the end of this year?

2 A. None at all.

3 Q. I'd like to talk about the Kingston scrubbers that are
4 being constructed now. Kingston is fairly near the Bull Run
5 plant, correct?

6 A. 32 miles by the drive. I make it quite often.

7 Q. All right. Can you describe the Kingston project.

8 A. It's essentially two scrubber projects in one. I think
9 Mr. Myers described the size of the units, 1750-megawatt
10 nameplate. There are nine units there. We essentially split
11 the gas flow in half. There are two size boilers on that
12 project -- on that site. The first four are 175-megawatt
13 nameplate each and the remaining five are 200-megawatt
14 nameplate each.

15 We essentially dedicate one of the absorbers to four of
16 those 200-megawatt units and then the other five, essentially
17 splits the gas flow and half will go to the other absorber.
18 So that project is essentially twice the size of what you just
19 looked at at Bull Run.

20 Q. All right. And how many -- how many people are working
21 on that project?

22 A. Well, again, I'll describe it in amount of hours expended
23 to date and number of folks. We're over 400 craftsmen on site
24 as we speak. We've expended somewhere over 1.4 million man
25 hours to date.

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1 Q. And if you would look at Defendant's Exhibit 219. It's a
2 series of photographs taken of the Bull Run scrubber project
3 in the last month or month and a half. And starting with the
4 first one, I'll ask you to describe to the court what those
5 photographs show.

6 A. This is, again, somewhat of an elevated shot looking down
7 on the -- looking towards the two absorbers and the pump
8 building in between.

9 Q. Let me stop you for a moment. I've been told by several
10 people that I called this Bull Run. I apologize. This is the
11 Kingston plant, isn't it?

12 A. Yes, it is.

13 Q. All right. Go right ahead, sir.

14 A. Okay. You can see the new stack that is coming -- that's
15 on the far side of the building that we're looking through.
16 On the right-hand side, you see a -- my colors aren't really
17 good on the monitor that I've got, but you can see the
18 absorber vessel. That's the A vessel. Over on the right --
19 or on the left you can see a -- some kind of a mirror image to
20 that vessel which would be the B vessel. That will be the
21 first one that we start up.

22 Q. If you'd turn to the next picture, and what does this
23 photograph show?

24 A. This is showing the two existing stacks that's combining
25 the flue gas for all nine units there. And the ductwork that

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1 is running in between there is the new inlet duct that you can
2 see the drops that are uninsulated so far on the left-hand
3 side. There will be two more on the right just like that that
4 will drop down to the axial booster fans. Then it will go
5 through a common duct and split off into the two absorbers
6 that we just looked at.

7 MR. LANCASTER: And if you'll put the next
8 photograph up, Ms. Shea.

9 Q. What is it a picture of?

10 A. This is a little later photograph at a little different
11 angle than what we just looked at. It's looking at the same
12 side of the A absorber on the right. You can see the siding
13 going up on the pump building in between the two absorber
14 buildings. And it's showing some of the inlet duct that's
15 coming around to the A absorber that's been erected.

16 MR. LANCASTER: If you would turn to the next
17 photograph.

18 Q. What does this show, Mr. Nash?

19 A. This is an interior shot of the absorber pumps. I
20 believe the orientation here, you're looking at the A absorber
21 vessel. There's a very similar line up, mirror image just on
22 the opposite side just under where the photographer would have
23 been.

24 Q. And the absorber section is where the reaction actually
25 takes place?

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1 A. That's correct.

2 MR. LANCASTER: And is there another photograph?

3 Q. What does this photograph show?

4 A. Well, this is a little later version of the inlet duct
5 that we looked at in one of the earlier photos there. They're
6 showing a crane actually erecting one of the isolation dampers
7 to -- for the axial booster fans.

8 Q. And then the final photograph, what does it show?

9 A. This is a picture that's looking directly down the path
10 of the inlet duct that we saw on an earlier slide that's going
11 to be erected going into the A absorber.

12 On the right-hand side you see the electrical building.
13 That building is complete. All the switch gears have been
14 delivered. It's being set right now.

15 You can see just on the left-hand side of the photo is
16 the outlet hood, stainless outlet hood for the B absorber
17 vessel. You can see that the inlet hood for the B absorber
18 vessel has been erected. This will go right on the other side
19 of that. Very similar to the Bull Run, opposite directions.

20 Q. So these photographs illustrate that construction work
21 has been engaged in to a substantial extent. What is the --
22 how far along is the project?

23 A. We're saying that construction right now is approximately
24 60 percent complete. Engineering may be 80 -- 88 percent
25 complete. Overall project is nearing 70 percent complete.

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1 Q. Okay. So the construction work is approximately
2 60 percent complete and yet the engineering and design work is
3 not complete yet?

4 A. That's correct.

5 Q. How can that be?

6 A. It's the typical fast track designer approach. If you
7 waited until the engineering was complete, the projects would
8 be much longer.

9 Q. So on your projects, you begin constructing the facility
10 even before completing the design work?

11 A. Always.

12 Q. What is the planned timetable for bringing the Kingston
13 scrubbers online?

14 A. We have two absorber vessels as I've talked about. The
15 first one, which will tie in units 6 through 9, four units,
16 about half the gas flow again, will be in the fall, next fall.
17 I think the outage dates have been set for -- it's a 21-day
18 outage in the October time frame. I think they're still
19 trying to optimize the exact start dates, again, based on our
20 boilermaker needs.

21 Q. So units 6 through 9, are you scheduled to be tied in in
22 October 2009?

23 A. That's correct.

24 Q. How about units 1 through 5?

25 A. They'll follow in the following spring. I believe that

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1 outage is being set right now for April, the April time frame.

2 Q. April 2010?

3 A. That's correct.

4 Q. And what is the projected total cost of the Kingston
5 scrubber project?

6 A. Current forecasts are about \$475 million.

7 Q. And how much of that has already been spent?

8 A. Again, I think the June cost reports totaled somewhere
9 about 250 million.

10 Q. And are you familiar with the contracts in place for the
11 Kingston scrubber project?

12 A. Yes, I am.

13 Q. And if TVA decided to stop building scrubbers at
14 Kingston, would there be any consequences under the contracts?

15 A. Over 90 percent of the contracts are a fixed price lump
16 sum contract, and under those contracts we'd be responsible
17 for any material that the contractor had committed to, may not
18 have received or paid for yet, but we'd be responsible for
19 that. We'd be responsible for lost profits.

20 Q. All right.

21 A. Pretty significant sum.

22 Q. As the TVA official responsible for the construction of
23 the Kingston scrubbers, are you aware of any reason why the
24 Kingston scrubbers will not be fully operational at all nine
25 units at the plant by 2010 as planned?

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1 A. No. I actually feel a little better about Kingston than
2 I did about Bull Run a few months ago. Using the lesson
3 learned that we've been able to use for both -- from both
4 Paradise and Bull Run, we're actually farther ahead on
5 Kingston at this time, it being a year behind Bull Run, than
6 Bull Run was a year ago. So I feel much better about it.

7 Q. All right. I'd like to talk last about the scrubber
8 project at the John Sevier plant in northeastern Tennessee.
9 Could you describe to the court what the pollution controls
10 scheduled to be constructed there are.

11 A. The schedule there are to install the scrubbers first. I
12 think that's been testified to previously. We'll have the
13 first two units scrubbed by January 1st of 2012 and the second
14 two units by June 1st of 2012. Then they'll follow on. Once
15 we have the scrubber, I'll describe the details of that here
16 in a minute, but that will allow us to install the SCRs
17 following that.

18 Q. Is there a reason why the SCR cannot be installed at the
19 same time?

20 A. Well, as I talked about, in order to support the
21 reaction, you need to be able to be in the flue gas change in
22 the 600-degree temperature range. That occurs right between
23 the economizer and air heater. There's been a retrofit
24 precipitator installed on each of the four units at John
25 Sevier that basically fills up every cubic foot of space

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1 between the back boiler wall and the existing stacks and there
2 is not enough room to even sink piling and put piers up to try
3 to build it on top. So we have to replace the existing
4 precipitators, then demolish them in order to have a space to
5 install the SCRs.

6 Q. And the precipitator you described, that's a pollution
7 control device for particulate matter?

8 A. Yes, sir.

9 Q. And is there a different kind of scrubber going in at
10 John Sevier?

11 A. Yes. We've been working on the conceptual design for
12 John Sevier for over a year and have concluded that due to the
13 space constraints, the fact that the precipitators are near
14 the end of their useful life, that it's a much better process
15 fit to install a dry scrubber at John Sevier, and that's the
16 way we're proceeding now.

17 Q. And where does that project stand?

18 A. Well, we've had to go out for bid in order to get another
19 contractor to erect that. Advatech only supports the wet
20 scrubber process, that is, the MHI technology. So in order to
21 do this and being a federal agency, we've had to go back out
22 on the street in order to get bids. We've been through that
23 process. We've reviewed them. We've selected the preferred
24 vendor. Been negotiating with them now for the last three
25 months. We've got all the commercial terms resolved and the

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1 attorneys are dotting the I's and crossing the T's and
2 expecting to have a signed contract just any time.

3 Q. And who is this vendor?

4 A. It's the Washington Division of URS.

5 Q. Do they have any experience constructing dry scrubbers?

6 A. That was the prime reason we selected them. They offered
7 a team that had just finished a dry scrubber on a Syncrude
8 project in Canada. And so they've offered that entire team to
9 support our project.

10 Q. And are they prepared to commit to the schedule that
11 would have this scrubber fully installed by June 1st, 2012?

12 A. Part of the contract has a significant bonus penalty
13 clause around the dates that I referred to as operational
14 dates and they're very confident and willing to sign up for
15 those provisions. They're confident they're going to get
16 their bonus and we hope they do.

17 Q. And what's your confidence level on having the John
18 Sevier scrubber installed on schedule in 2012?

19 A. Well, having an entire team that just finished one of
20 those designs and them willing to commit to the amount of risk
21 that we've got associated with those dates, I'm very
22 confident.

23 Q. All right. And so, sir, is it your expectation that the
24 scrubbers at the Bull Run plant, all nine units at the
25 Kingston plant, and all four units of the John Sevier plant in

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1 eastern Tennessee will all be construction -- constructed and
2 operational before 2013?

3 A. Yes, sir.

4 MR. LANCASTER: No further questions, Your Honor.

5 MR. GOODSTEIN: Thank you, Your Honor.

6 CROSS EXAMINATION

7 BY MR. GOODSTEIN:

8 Q. Good afternoon, Mr. Nash.

9 A. Good afternoon.

10 Q. Your supplemental report, Mr. Nash, that you provided to
11 us earlier in this case, it states that to follow Dr. Staudt's
12 proposed time frame, TVA would be required to build
13 approximately eight FGD's on 21 units at four plants. Do you
14 recall that language? And the plants are Colbert, Shawnee,
15 Gallatin and Allen. Does that sound correct?

16 A. That's correct.

17 Q. I was a little confused about your earlier testimony
18 referring to Plaintiff's Exhibit 54. That was Mr. Staudt's
19 table. But I think perhaps the confusion was that some of the
20 technology listed on that table has already been installed; is
21 that right? For example, the SCRs and the scrubbers at the
22 Cumberland plant, they were listed on there. And you can see
23 it in front of you. Those are already installed, right?

24 A. That's correct.

25 Q. And the same thing with Paradise.

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1 A. That's correct.

2 Q. Okay. So this figure contains both already installed
3 projected technology and then technology that needs to be
4 installed.

5 A. But I think Mr. Staudt also shows in this particular
6 table that all units at TVA will be scrubbed. And so I think
7 the numbers that we talked about earlier, the 41 remaining are
8 still correct.

9 Q. But I think we're having -- we're talking past each
10 other, I think, a little bit because with a FGD, you don't
11 have to build an FGD for each unit; isn't that correct?

12 A. That's correct. We do something very similar to what
13 we're doing at Kingston where we're putting nine units through
14 two FGD absorber vessels.

15 Q. Okay. So your -- your report, your supplemental report
16 that you submitted in this case, you have no reason to think
17 that that's not correct, right? There you said approximately
18 eight FGDs would be required to follow Dr. Staudt's proposed
19 time frame; is that correct?

20 A. For those four sites, that's correct.

21 Q. And up until -- this is new information for us that we
22 just received about the John Sevier scrubber not being an
23 Advatech designed scrubber. Prior to this negotiation with
24 the Washington Division of URS, TVA was using a single source
25 scrubber contract, correct?

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- 1 A. That's correct.
- 2 Q. With Advatech.
- 3 A. That's correct.
- 4 Q. And as you've testified, Advatech is a joint venture
- 5 between Mitsubishi and URS and URS is one of the largest
- 6 global engineering design firms in the world; is that correct?
- 7 A. I think I said the U.S., but...
- 8 Q. I must have taken this language out of one of your
- 9 reports, but you wouldn't disagree with that, right?
- 10 A. I do not.
- 11 Q. So they have a lot of engineering capacity at Advatech?
- 12 A. At URS they do.
- 13 Q. Okay. And Advatech is a joint venture of URS and
- 14 Mitsubishi, correct?
- 15 A. That's correct.
- 16 Q. And TVA uses more than one general contractor for their
- 17 outage maintenance projects; isn't that true? You have one on
- 18 one region and one on the other region?
- 19 A. Basically, two do most of the work, that's correct.
- 20 Q. And there are a number of organizations out there in the
- 21 marketplace in addition to Advatech and the Washington
- 22 division that provide scrubber technology; isn't that true?
- 23 A. That's true.
- 24 Q. Alstom is one of them, for example?
- 25 A. Yes.

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- 1 Q. Marselux is another one; isn't that true?
- 2 A. Yes.
- 3 Q. And Black and Veatch is another one; isn't that true?
- 4 A. They're basically a design contractor and I think they
- 5 offer a specific technology, the Chyoda Technology, but that's
- 6 correct.
- 7 Q. And Sargent and Lundy is another one; isn't that true?
- 8 A. That's correct.
- 9 Q. And there are also a number of companies out there in the
- 10 marketplace that provide SCR technology; isn't that true?
- 11 A. Yes.
- 12 Q. Like Babcock and Wilcox, Babcock Power, and Alstom, also;
- 13 isn't that true?
- 14 A. That's true.
- 15 Q. And isn't it also true, Mr. Nash, that TVA used labor
- 16 from outside of the Tennessee Valley for the NOx SIP call?
- 17 A. We traditionally get labor from outside the valley during
- 18 our outage seasons, that's correct.
- 19 Q. You've had a preference on the Advatech scrubber project
- 20 for 70 percent of the subcontracts to go to Tennessee Valley
- 21 firms; isn't that true?
- 22 A. We put a provision in the contract that encourages them
- 23 to use valley firms, that's correct.
- 24 Q. But as necessary, you have historically gone to labor
- 25 pools outside of the Tennessee Valley.

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1 A. Yes, we have.

2 Q. And in your description of your concerns today that the
3 basis for those concerns are not an analysis of labor markets,
4 national labor markets for craft labor like boilermakers;
5 isn't that true? I mean, you didn't look at the national
6 labor data. You're just testifying about your experience with
7 the TVA program; isn't that true?

8 A. I'm testifying of my experience of building 21 SCRs and
9 the current two scrubbers. And for the past seven years or
10 longer, we've been experiencing shortages of boilermakers, and
11 we're far -- several years away from what several folks
12 anticipate the peak to be.

13 Q. You took over the scrubber program in what year?

14 A. 2006.

15 Q. 2006. Prior to that time, you didn't have experience
16 with scrubber technology from your work at TVA; isn't that
17 true?

18 A. Not from my work at TVA, but I built scrubbers in
19 Florida, in Ohio. So I had previous experience.

20 Q. But with the TVA program, you basically inherited the
21 structure that the TVA scrubber program had at that time with
22 a single source contract with Advatech; is that correct?

23 A. That's true.

24 Q. And you've said previously to me in your deposition that
25 it was your view that TVA should have completed conceptual

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1 designs on these future scrubber projects at the time they
2 looked at them in the late 1990s; isn't that true? Isn't that
3 your view, Mr. Nash, that these conceptual designs --

4 A. I don't believe I said in the late '90s. I think what
5 I -- I think if I recall our discussion during our deposition,
6 that I agreed with the Bechtel Report that suggested that TVA
7 go out and complete their conceptual designs on the upcoming
8 scrubber projects to have a better handle on the requirements
9 for those projects.

10 Q. Okay. And that -- I appreciate that. And that might
11 have identified the decision on the technology to be used at
12 the John Sevier scrubber project sooner than it was recently
13 selected; isn't that true?

14 A. Well, I don't know that that's totally true. The real
15 decision -- the real factor that changed that decision was the
16 recognition that the existing precipitators were at the end of
17 their useful life. That changed our look at that entire
18 project. At one time early on we were looking at low dust
19 SCRs that would physically take up the footprint just beyond
20 the existing ID fans, and that particular piece of information
21 or that recognition of needing to replace that then drove the
22 economics in favor of a dry scrubber. They're more expensive
23 to operate than a wet scrubber. So unless there's some
24 compelling reason or unless you're going to be burning a real
25 low sulfur coal, it's economically more advantageous to

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1 install a wet scrubber. So I don't know that I question TVA's
2 decision on wet scrubbers.

3 Q. But at the time we spoke at your deposition, it was the
4 plan to install a wet scrubber at John Sevier, wasn't it?

5 A. That's correct. That was well over a year ago.

6 Q. Okay. And in fact, at that time, although the
7 announcement had been issued for the John Sevier scrubber
8 project, the land had not been obtained for the landfill
9 necessary for the gypsum that would come off the scrubber;
10 isn't that true?

11 A. We were still in the process of acquiring that property,
12 that's correct.

13 Q. So in fact, the announcement went out before the
14 conceptual design was done on that; isn't that true?

15 A. Well, that's true.

16 Q. That made it more difficult to negotiate with adjacent
17 property owners for the land necessary; isn't that true?

18 A. No, I think I -- I think he understood the value of his
19 property and I don't know that the announcement had really any
20 effect.

21 Q. And you haven't requested any bids from contractors for
22 the accelerated scrubber program sought by North Carolina in
23 this case; isn't that true?

24 A. That's true.

25 Q. And you haven't requested any bids for the accelerated

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1 SCR program sought by North Carolina in this case; isn't that
2 true?

3 A. We have not requested bids, but we've had some additional
4 conceptual designs done.

5 Q. Well, I asked you in your deposition if TVA asked anyone
6 to ask suppliers of equipment for SCRs to see if they would be
7 available for completion of these projects by 2013, and you
8 said at that time that you're not responsible for the SCR
9 program and so you don't know. Do you have some more
10 information now?

11 A. Yes, I do. That was -- that was June of 2007, I believe.

12 Q. And you thought at that time that some acceleration of
13 TVA's program could be accomplished; isn't that true?

14 A. That's true.

15 MR. GOODSTEIN: Can we put up Plaintiff's Exhibit
16 112, please.

17 Q. We asked during your deposition, Mr. Nash, whether you
18 had some documentation from benchmarking sessions that you
19 attended. Do you recall that question?

20 A. Yes, I do.

21 Q. And do you recall producing a slide that's in front of
22 you, Plaintiff's Exhibit 112, from the Southern Company?

23 A. I recall the slide and I'm sure we discussed it, yes.

24 Q. And this is an accurate summary of Southern Company's
25 environmental projects, isn't it?

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1 A. It would have been at the time it was created. I don't
2 know how they have actually executed these contracts and
3 whether -- whether they're still on target for all those.

4 Q. Okay. But counting absorber towers now, you count eight
5 scrubber projects going on simultaneously between 2005 and
6 2010; isn't that true, Mr. Nash?

7 A. That's correct.

8 Q. In addition to additional scrubber projects and
9 additional SCR projects; isn't that true?

10 A. I see the line for additional scrubbers, but with all the
11 interface we've had with Southern, in knowing the projects
12 that they've announced, I'm not sure which units those would
13 include.

14 Q. But this is the slide that you produced to us in
15 discovery in this case from your benchmarking sessions, isn't
16 it?

17 A. This is a slide that was created by Southern Company on
18 what their plan was at the time we had met, which I think was
19 early 2006.

20 MR. GOODSTEIN: Can we put up Plaintiff's Exhibit
21 119, please.

22 Q. And you did a projection, Mr. Nash, of the actual FTE --
23 I think this exhibit was received without the title so I'm
24 going to take the title off. It's a little confusing.

25 I think this is total FTE's; isn't that true, Mr. Nash?

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1 A. I believe that's what it shows on the left-hand scale,
2 yes.

3 Q. And isn't it true that this projection that you prepared
4 actually peaks in January of 2012? Isn't that true that the
5 top peak is in 2012?

6 A. Yes. This would be the manpower requirement to execute
7 the plan that was presented in Mr. Staudt's report.

8 MR. GOODSTEIN: Thank you very much.

9 We have no further questions, Your Honor.

10 MR. LANCASTER: We have no redirect.

11 THE COURT: All right. Thank you, Mr. Nash. That
12 will complete your testimony and you're excused.

13 We'll take a 15 minute midafternoon recess.

14 (Brief recess at 4:12 p.m.)

15 THE COURT: All right. Mr. Lancaster, call your
16 next witness.

17 MR. LANCASTER: Defendant TVA calls Mike Scott.

18 MICHAEL THOMAS SCOTT,

19 being first duly sworn, was examined and testified as follows:

20 MR. LANCASTER: I would ask Mr. Scott to get Book 12
21 off of the -- off of the shelf of books.

22 And would ask if the court would like to have the
23 exhibits handy, they should all be in Book 12.

24 THE COURT: Very good. Thank you.

25 DIRECT EXAMINATION

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- 1 BY MR. LANCASTER:
- 2 Q. Would you please state your full name for the record.
- 3 A. Michael Thomas Scott.
- 4 Q. And where do you live, Mr. Scott?
- 5 A. Chatanooga, Tennessee.
- 6 Q. Where do you work?
- 7 A. In the Fossil Power Group for TVA.
- 8 Q. And what is your position with the Tennessee Valley
- 9 Authority?
- 10 A. I'm the Senior Strategic Program Manager for Fossil Power
- 11 Group.
- 12 Q. And what are your duties in your current job?
- 13 A. My primary duties are to be the Fossil Power Group's
- 14 representative for fossil power supply planning which is the
- 15 planning of all of the fossil assets out through the 20-year
- 16 planning horizon.
- 17 Q. And when you say fossil, what do you mean by that?
- 18 A. It is our coal and gas plants.
- 19 Q. And you've had a fairly recent job change.
- 20 A. Yes. Recently I moved from a previous position where I
- 21 did TVA's clean air strategy to the Fossil Power Group, power
- 22 supply planning strategy.
- 23 Q. And how long were you in the position involving clean air
- 24 strategy?
- 25 A. My clean air strategy position began in 1997 and extended

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1 through 2006.

2 Q. So about ten years.

3 A. About ten years.

4 Q. I'd like to take you a little further back than that.

5 Could you tell us about your education.

6 A. Yes. I'm a graduate of the University of Florida with a
7 Bachelor of Science Degree in Civil Engineering. I have a
8 Master's Degree in Civil Engineering through the University of
9 Tennessee at Knoxville.

10 Q. And are you a licensed professional engineer?

11 A. Yes, I am a licensed professional engineer in the state
12 of Tennessee.

13 Q. And how long have you been employed with the TVA?

14 A. Since 1976 when I graduated from the University of
15 Florida.

16 Q. And so that was your first job out of school?

17 A. That was my first job out of school, yes, sir.

18 Q. If you could briefly take us through your career at TVA
19 before you took over the clean air planning duties in 1997.

20 A. My early years I was a design engineer working on TVA's
21 generating facilities. When I hired into TVA, the primary
22 design functions were in the areas of nuclear power plant
23 design, and I worked in that organization in that function for
24 the first four or five years of my career.

25 A little later in my career, I then moved over into

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1 another design organization within TVA and this was a design
2 organization that worked on TVA's existing coal-fired power
3 plants, and we would do modifications and design work for
4 those particular power plants.

5 Q. And in 1997 you became the manager of Title IV programs?

6 A. That is correct.

7 Q. And what does that mean?

8 A. In that regard I had two primary responsibilities. The
9 first one was that I was the manager over the development of
10 TVA's clean air strategy and the second part of that role was
11 that I also had the stack monitoring program under my
12 responsibility.

13 Q. And so you were in charge of -- if you could explain to
14 the court what stack monitoring is.

15 A. As part of the 1990 Clean Air Act Amendments, there was a
16 requirement to measure emissions of SO₂ and NO_x on all of the
17 coal-fired facilities in the country. TVA's facilities met
18 that requirement and I had the programmatic responsibilities for
19 managing those emissions from that. While the sites conducted
20 the day-to-day operations, we had programmatic responsibilities
21 for TVA's stack monitors.

22 Q. And at the time you took over the clean air planning
23 responsibilities in 1997, approximately what were TVA's
24 emissions of sulfur dioxide and nitrogen oxides?

25 A. The sulfur dioxide were roughly 880,000 tons of SO₂, and

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1 it was around -- help me here. It was about 400 -- no excuse,
2 me 505,000 tons of NOx on an annual basis.

3 Q. And what were TVA's annual emissions of those, of sulfur
4 dioxide and nitrogen oxides, in 2007 when you handed your
5 responsibilities on to your successor?

6 A. We made significant reductions over that course of time.
7 We were in the SO₂ arena down in the low 400,000-ton range and
8 in the NOx -- annual NOx we were around 190 to 200,000 tons.

9 Q. And these emission reductions of approximately
10 500,000 tons of sulfur dioxide and 300,000 tons of nitrogen
11 oxides per year that occurred under your watch, what sort of
12 programs was TVA complying with during that time?

13 A. The regulatory programs that were in place at that time
14 were primarily cap-and-trade programs. Those would be the
15 programs where there is a cap on the country, but there is not
16 a cap per se on any one plant or company.

17 Q. And did you help design TVA's strategy for how to operate
18 in this cap-and-trade world?

19 A. Yes, sir, I did.

20 Q. And what was that strategy?

21 A. That strategy was, as my coworkers have mentioned before,
22 we had a self-compliant strategy goal; and to meet that end,
23 what we did is we evaluated all the various technology, fuel
24 options that were available to us, and then we would put
25 together for the 59 coal units the program that would meet

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1 that reduction goal in the most cost-effective manner,
2 realizing that the TVA rate payers ultimately have to pay the
3 bill for what this would cost. So we were very mindful of the
4 cost component and we would therefore tailor our design of a
5 strategy to protect not just emission reductions that were
6 established as far as the self-compliance, but also from
7 the -- to meet the rate payers' requirement for low cost
8 reductions.

9 Q. There has been some testimony in this trial about the
10 purchase of emission allowances. Under your watch, did TVA
11 choose instead to reduce emissions instead of purchasing
12 allowances?

13 A. Yes. Over that time period, as the numbers we just
14 previously discussed mentioned, TVA made significant strides
15 towards reducing its SO₂ emissions and also NOx emissions.

16 Q. Please explain to the court how TVA's clean air planning
17 process works.

18 A. First off, TVA's clean air planning process is a part of
19 a bigger process that we use at our company, and indeed,
20 probably at most companies in the country. Power supply
21 planning is the greater goal of the company. In other words,
22 we have electricity requirements to meet our customers' needs;
23 and in order to do so, there is significant planning
24 activities that take place in the power supply planning arena.

25 That being said, clean air and clean air strategy is a

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1 significant piece of power supply planning; and as a result,
2 it is fully integrated into TVA's planning processes.

3 Q. And power supply planning, is that the planning that is
4 done to assure that TVA will be able to generate the
5 electricity it expects its customers to need in the future?

6 A. Yes. It is a -- it is an elaborate process that has
7 multiple goals. Obviously, the first one when the customer
8 goes and turns the light switch on, the expectation is,
9 whether it's today, tomorrow, five years or ten years from
10 now, that light switch is going to work. And consequently,
11 that is the first and foremost goal that we need to consider
12 is to keep the lights on, so to speak.

13 Within that, then, there are requirements to do that in
14 the course of all regulatory requirements, be it environmental
15 or otherwise.

16 Q. And how far out does this power supply planning go?

17 A. At TVA the typical time horizon that we plan to is a
18 20-year look ahead for power supply and also clean air plan.

19 Q. And how does the clean air planning and the power supply
20 planning inter -- what is the interaction?

21 A. Well, there's multiple interactions between the two.

22 First off, in power supply planning, that begins where
23 you have to understand what the future demand for your
24 product, electricity, is. Once you understand that demand for
25 your product, then within the context of the fossil

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1 organization, the coal plants, they supply typically around
2 60 percent of the electricity today. In the past it's been a
3 different amount. In the future it may be a different amount.

4 So consequently, what we have to do to start with is what
5 are the generation expectations that the company has for the
6 fossil coal plants. Once we have that particular starting
7 point, we then devise a strategy for clean air compliance to
8 meet the goals of emission reductions and also the goals of
9 generation production for power plants.

10 The power supply plan in turn takes those clean air
11 strategy decisions, and those decisions are very specific in
12 terms of what we do, when we do it and exactly what the
13 outcome will be, and they embed those particular facets into
14 the power supply plan.

15 One example of that would be my -- Mr. Nash indicated
16 that he is going to be tying in the Bull Run scrubber this
17 coming outage. He will be tying in the Kingston scrubbers in
18 two subsequent outages. At Kingston, when they tie in the
19 first scrubber, it will take four units on outage and take
20 their power generation off of the system in order for that
21 scrubber tie in to occur. If you don't plan for that, then
22 it's going to be very difficult to say with certainty that I'm
23 going to turn the light switch on and the lights will come on.

24 So that is a short-term integration of how clean air and
25 power supply planning works.

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1 On the broader horizon, you also have to look and see
2 that if you have a generation that is higher or lower, then it
3 will affect what controls, where you put them and also the
4 timing of when those controls will come in.

5 Q. There's been a lot of talk in the last week and a half
6 about the DC Circuit's decision vacating CAIR, the Clean Air
7 Interstate Rule. Are there uncertainties going forward about
8 what the rules are going to be with clean air compliance?

9 A. When you look at power supply planning, when you look at
10 clean air planning, there are -- there's one certainty and
11 that is that there will be uncertainty. There will clearly be
12 changes. I wish I could say that in my career I had a crystal
13 ball that was accurate enough to know what the future held for
14 us, but unfortunately, life doesn't treat us quite that
15 kindly.

16 So the aspects of CAIR being vacated clearly was, you
17 know, an event that wasn't necessarily planned for; however,
18 part of our clean air strategy process builds on what we call
19 Regulatory Outlook Document, which is a product that
20 Mr. Myers, the first witness this morning, develops for us.
21 And he produces that in such a fashion that it allows, what we
22 typically call, you to peel back the layers of the onion. In
23 this particular example, CAIR was a top layer of the onion and
24 it has now been peeled back. And underlying that in this
25 Regulatory Outlook Document they produce, we now see all the

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1 other clean air drivers and emission drivers.

2 And what we have done in our power planning requirements
3 is that we are cognizant of not just the primary driver, which
4 in this case was CAIR, but also the secondary drivers. And
5 part of our strategy development is to ensure that we have at
6 least considered those aspects.

7 Q. And so looking a number of years down the road, do you
8 have to plan for rules and statutes and regulations that may
9 not even exist yet?

10 A. Typically that is the planning horizon that most often
11 you are dealt with. If we go back to the NOx SIP call, our
12 efforts in terms of strategy clearly predated when that rule
13 was put in place. The same thing with the CAIR. If you go
14 back to our clean air plans, we typically precede any rule
15 making by several years.

16 Q. Do you employ any strategies in your planning -- and feel
17 free to get a drink of water.

18 Do you employ any strategies in your plannings to help
19 you deal with the uncertainties?

20 A. Some common approaches that we use is to look at more
21 than single outcomes. One example we already talked about was
22 the peeling of the onion.

23 The second approach would be to look at what we also go
24 back to that Regulatory Outlook Document. We have what we
25 call our base case projection. But we also have a high and a

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1 low case which is what things could look like in a low
2 probability world or high probability world. And we look at
3 the decisions that we're going to bring forward and say if the
4 high case world was to occur, how does that strategy fare in
5 that world? If the low case strategy was to occur, how
6 would -- or low case world would occur, how would that
7 strategy fare?

8 And what we do is we don't necessarily make a change to a
9 strategy because of that. However, what we do is we see
10 whether or not there are some real bumps in the road. One of
11 the things that we have learned painfully so is that
12 flexibility has great value. That once you commit to a
13 course, it is very difficult to unbuild a power plant control
14 device. And if you are a rate payer of the Tennessee Valley
15 region, we clearly have an obligation, we feel, that we want
16 to make the investment with prudence and certainty to the
17 extent practical and possible.

18 Q. And the -- this planning process results in something
19 called a power supply plan; is that correct?

20 A. That is correct.

21 Q. And is that a document?

22 A. It is a document that is produced. It has financial as
23 well as generation projections for the TVA system included in
24 it.

25 Q. And the clean air strategy planning process, it results

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1 in a document as well?

2 A. Yes, it does.

3 Q. And what is that?

4 A. It is a -- typically what most people see is a
5 multiple-page kind of a high level overview presentation
6 that -- and what it does, it will tell you what type of
7 controls we're going to put on for NOx. What type of controls
8 we're going to put on for SO₂. What kind of controls are
9 required, if any, for particulate. Where we're going to put
10 them. Where we're going to put them. And the type of
11 technology that we employ to get to those strategy decisions.

12 Q. And the power supply plan and the clean air planning
13 document, are they produced in the ordinary course of
14 business?

15 A. TVA, as a large power producer, clearly has annual, if
16 not more frequent, power supply plans that are produced.

17 As part of producing a power supply plan, we also produce
18 regularly, at least annually, a clean air strategy update.

19 Q. And are the power supply -- pardon me. Are the power
20 supply plan and the clean air plan, are they relied upon by
21 TVA to make any decisions?

22 A. It is -- both of those are used for decision making from
23 near term decisions such as budgeting, budget setting for the
24 next year, to long range planning decisions such as a control
25 at John Sevier that is five years out, and subsequently other

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1 decisions that will be taking place.

2 The power supply plan, on a little different note, our
3 Watts Bar 2 nuclear plant that is being restarted with an
4 online time in the 2012 time period, was a product of this
5 process. So it's used by the company, the point there, not
6 just in clean air, but for all of the aspects that go into
7 running a business such as TVA's.

8 Q. Okay. If you would look at Defendant's Trial Exhibit 199
9 which is in Book 12.

10 A. Yes, sir.

11 Q. What is Defendant's Exhibit 199?

12 A. It is a copy of TVA's Clean Air Strategy Process. This
13 is a document that is used today. Has been used since its
14 inception back in 2002. It defines how we conduct our annual,
15 semi-annual, and at that time we were even doing quarterly
16 updates to the clean air strategy process to align also with
17 our power supply planning process.

18 Q. So Defendant's Exhibit 199 is the actual TVA procedure
19 that describes the process you've just been describing to the
20 court.

21 A. Yes, sir, it does.

22 Q. And you mentioned a moment ago something about revising
23 the clean air plan. Does it change?

24 A. Yes.

25 Q. Why does it change?

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1 A. Obviously, we talked about uncertainties and
2 uncertainties can come in a lot of forms and fashions. One
3 uncertainty is what the load is going to be. If a regulatory
4 change occurs, if a regulation of some other type should
5 occur, if TVA chooses to meet its generation needs in some
6 other fashion. All of those could produce a change in the TVA
7 clean air plan.

8 Q. Do the changes ever incorporate lessons learned from past
9 control activities?

10 A. Yes. Clearly it's a building block process that -- one
11 of the positive notes about going in and doing frequent
12 updates to a process in clean air strategy is that you get
13 hopefully a little smarter if you have to build more than one
14 of these things. And I think Ron Nash has indicated that
15 we've learned from Paradise and Bull Run how to do things a
16 little bit quicker, better in that the Kingston scrubber one
17 year following Bull Run is further along than its predecessor
18 was at that time. So that's one example of how we would use
19 this.

20 Others would be that we learn about technology
21 improvements. For instance, we have a technology that we're
22 using at John Sevier, the spray dryer technology. That is a
23 process. This process has us go back and relook at the
24 founding principles of performance and cost on the control
25 equipment, and that was in part why we ended up with that

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1 change at John Sevier.

2 Q. So sometimes the plan changes if you figure out a better
3 way to do something?

4 A. Yes, sir.

5 Q. How about is there any difference in terms of the
6 solidity of the plan between the near term and the long term?

7 A. Clearly the near term is much more, if you will, cast in
8 stone than out years. I think that as you go further out in
9 time, TVA has routinely commented to the effect that while
10 certain specific applications and details such as dates
11 certain and plants certain might have changes for various
12 reasons, the overall trend that we have put our company on
13 since the mid 1990s remains unabated. Our long-range goal
14 which was emission reductions, verified once again by the
15 board of directors, you know, we continue on that path.

16 So while the out-year plans may change as we optimize
17 those and find better ways of doing the same thing, the
18 objective long term remains unchanged.

19 MR. LANCASTER: Your Honor, I move the admission of
20 Defendant's Exhibit Number 199.

21 THE COURT: Let it be admitted.

22 (Defendant's Exhibit Number 199 was received into
23 evidence.)

24 Q. I'd like to talk with you now, Mr. Scott, about the
25 projections that plaintiff's witness Dr. Staudt prepared for

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1 TVA's 2013 emissions. You're familiar with those, aren't you?

2 A. Yes, I am.

3 Q. And you've examined those projections based on your
4 knowledge and experience from ten years of service as the TVA
5 official responsible for clean air planning?

6 A. Yes, I did.

7 Q. And have you used your knowledge of TVA's power supply
8 planning and clean air planning assumptions in order to
9 address Dr. Staudt's projections?

10 A. Yes, we evaluated his projections.

11 Q. And you're aware that Dr. Staudt has testified or has
12 prepared projections that TVA's coal-fired system would have
13 about 450,000 tons of sulfur dioxide in the year 2013. Are
14 you aware of that?

15 A. Yes, I am.

16 Q. And do you believe those projections are realistic?

17 A. No, I think that those are quite overstated emissions for
18 several reasons.

19 One, last year we emitted 374,000 tons of SO₂ and that
20 was without the scrubbers at Bull Run, the scrubbers at
21 Kingston, without the switch -- fuel switches that we plan to
22 make at Johnsonville. So to say that we would go backward
23 from where we are would not make any sense to me.

24 Q. And I'd like to look at some of the specifics, a few of
25 them, of Dr. Staudt's projections and have you look at what

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1 I've marked as TVA Exhibit 265 in Book 12.

2 A. Okay.

3 Q. Defendant's Exhibit 265 is a page from Dr. Staudt's
4 report where he summarized his projections for what he called
5 his base case for TVA for the year 2013. And you are familiar
6 with this table, aren't you?

7 A. Yes, I am.

8 Q. And I'd like to look at a few of these particulars,
9 starting with the entry on the Paradise unit 3.

10 A. Yes.

11 Q. You're familiar with the Paradise plant, aren't you?

12 A. Yes, I am.

13 Q. Have you worked there?

14 A. I spent several years working as the program and project
15 manager supporting capital projects at that particular plant
16 in the early '90s. So yes, it's my home away from
17 Chattanooga.

18 Q. And how many units are at Paradise?

19 A. Paradise has three units. Two -- units 1 and 2 are
20 roughly 700-megawatt units and unit 3 is around an
21 1100-megawatt unit.

22 Q. And all three units have scrubbers?

23 A. All three have scrubbers.

24 Q. And is there a difference between them or among them?

25 A. Yes, quite different. Units 1 and 2 scrubbers were

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1 technology that was built in the early 1980s. Unit 3 is TVA's
2 newest scrubber. It came online last year. And they both,
3 while being wet limestone scrubbers, have different designs
4 and certainly different efficiencies of removal between the
5 three units; 1 and 2 being nearly the same and 3 being much
6 better.

7 Q. What sulfur dioxide emission rate did Dr. Staudt assume
8 for the year 2013 for the Paradise unit 3 scrubber?

9 A. He used a .6 pounds per million BTU emission rate for
10 Paradise 3.

11 Q. And do you know why he did that?

12 A. He indicated that he had done that because it was similar
13 to the technology -- the emissions on the other scrubbers, is
14 the best I recollect.

15 Q. And those other scrubbers were built about 20 years ago.

16 A. Actually, they're around 25 years ago now.

17 Q. Can you think of any reason why the new scrubber would
18 have that removal at that emission rate?

19 A. No.

20 Q. And what was Paradise unit 3's actual sulfur dioxide
21 emission rate last year?

22 A. It was in about the .15 to .16 range, if I remember
23 correctly.

24 Q. And what difference would that make for the Paradise unit
25 3's 2013 sulfur dioxide emissions?

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1 A. It would mean that on those particular tons, that he
2 would be off by roughly, you know -- they would be reduced by
3 75 percent from what he projected. And he had projected
4 around about a little over 18,000 tons. So if you do the
5 math, it's around 14,000 tons.

6 Q. So if the Paradise 3 scrubber is operating at a .15 rate
7 as it did last year, that causes Dr. Staudt's projections to
8 be overstated for that unit by about 14,000 tons.

9 A. That's correct.

10 Q. I'd like to ask you about the Bull Run plant now. What
11 did Dr. Staudt assume as an emission rate for the Bull Run
12 plant?

13 A. 1.17 pounds per million BTU.

14 Q. And is that a scrubbed emission rate?

15 A. No, that is, as it was referred to earlier in the
16 testimony, a low sulfur coal, nonscrubbed rate.

17 Q. What would a scrubbed emission rate be for the Bull Run
18 plant?

19 A. It would be in the .15 to .2 pounds per million range.

20 Q. And if, in fact, the Bull Run plant has scrubbed
21 emissions in 2013, what effect does that have on Dr. Staudt's
22 projections?

23 A. He would have overstated by about a factor of 6 or 7
24 where he had projected 34,000 tons of emissions. So you would
25 have roughly, I think, 25 or 28,000, somewhere in that range,

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1 of extra -- higher emissions in his projection than what you
2 would have with that unit being scrubbed.

3 Q. And what is your expectation for the scrubber at the Bull
4 Run plant in your planning for TVA?

5 A. That scrubber, as Mr. Nash had indicated, is virtually
6 complete. I have been to that facility and see no reason why
7 with that particular design that it won't be at a .15-pound
8 per million range. That's clearly within the realm of what we
9 would expect from that particular plant. And in fact, for
10 power supply planning activities, that is the rate that's
11 being used.

12 Q. Are there any reasons that would favor TVA's operation of
13 that scrubber?

14 A. At this point in time, virtually all the costs of
15 building that scrubber have been expended. While there's
16 still some work to be done, at this point it will be finished.
17 In addition, it provides us with what I will call fuel
18 flexibility; whereas, we are burning a very expensive -- what
19 we call compliance low sulfur coal at that plant, it does
20 offer us the opportunity to change fuels depending on what the
21 fuel markets at any one time afford us.

22 Q. Would there be a fuel cost savings associated with
23 operating the scrubber at Bull Run?

24 A. At Bull Run -- at Bull Run, yes, there would. In
25 addition, if we were to have built this scrubber -- I've

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1 already mentioned that we have a -- at TVA a commitment to our
2 rate payers. It would be a very difficult, I believe,
3 decision to tell a rate payer that we've just spent all this
4 money and now we're not going to provide you with the air
5 quality improvements that it was designed to meet.

6 Q. Now, speaking of fuel cost savings, I'd like to ask you
7 about something in Dr. Staudt's testimony.

8 MR. LANCASTER: Your Honor, may I approach the flip
9 chart?

10 THE COURT: Yes.

11 Q. During Dr. Staudt's testimony, he prepared what appears
12 to be a hypothetical calculation regarding fuel cost savings.
13 It wasn't included in his expert reports, but have you had a
14 chance to examine what has been marked as Plaintiff's Exhibit
15 484?

16 A. Yes, I did have an opportunity to look that chart over.
17 And if I understand the presumption of what that particular
18 exhibit showed, it was to say that the fuel cost savings that
19 TVA could achieve by building scrubbers according to his plan
20 would, for the most part, pay for the cost of building those
21 scrubbers.

22 And when I saw that, I went and did a couple things.
23 First off, I looked at some of the bases that he used for the
24 numbers, one of which was very key is he used a number, it's
25 called CRF, of 10 percent. And the CRF is what is called

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1 capital recovery factor. And the way I would liken that to is
2 that's kind of how you amortize the capital costs of the
3 asset. Scrubbers are large capital cost structures,
4 facilities. And that basically, the capital cost recovery
5 factor is a way of converting that cost into an amortization
6 or house payment, so to speak.

7 He used a low number, 10 percent. And if you go back
8 into the financial tables, what that equates to is an
9 8 percent cost of money at over a 20-year period.

10 TVA, as owner and operator of these facilities, uses a
11 quite different number for various reasons. We use a capital
12 recovery factor of instead of 10 percent, or .1 is how it's
13 used. You multiply the cost of the facility by a .1 and
14 that's your annual cost. We use a .18 capital recovery
15 factor. And two components that create that number are the
16 time period that we use, which is ten years, and also the cost
17 of money and risk, which we use 12 percent. That was what was
18 done in our studies and in our depositions and in our expert
19 reports.

20 So that would produce a significant change where he used
21 a 4 billion capital cost -- and again, we had a difference in
22 our capital cost structure, but using the numbers he had, he
23 said that the capital recovery cost of the 4 billion in
24 capital would be \$400 million a year. He then added an
25 operating cost of 190 million and came up with a total cost,

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1 if you will, of 590 million. And what he was saying was that
2 the savings from fuel costs would more than pay for that. And
3 we clearly don't have that -- that particular number in terms
4 of our fuel savings.

5 Q. What is your experience with the range of fuel cost
6 savings?

7 A. It will vary quite dramatically from plant to plant.
8 When you look at some of our facilities, there's no -- little
9 or no fuel cost savings that we would anticipate. At our
10 Paradise plant, Paradise unit 3, we are currently scrubbing a
11 large amount of PRB coal.

12 Q. Is that Powder River Basin coal?

13 A. Powder River Basin. That was the fuel that we were
14 burning prior to the scrubbers. So clearly we do not see much
15 of a fuel savings there because we are burning that current
16 fuel. If fuel markets change, we might have an opportunity,
17 but today we are burning PRB at that particular facility.

18 Other facilities, Bull Run will be on the other extreme.
19 Bull Run is one where we do expect to achieve fuel cost
20 savings because it's locked into high price coal markets.

21 As we go out to other parts of our system, we have
22 different opportunities to create fuel savings. I think some
23 of them are already powered by low sulfur fuel and low cost
24 fuel and we may not choose to burn a different fuel after the
25 scrubbers are installed. So it does vary.

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1 So to make a broad brush statement, that would be one
2 that would be kind of interesting to say that fuel savings pay
3 for a scrubber.

4 Q. So do you believe that Dr. Staudt's hypothetical
5 calculation, if I recall, the chart is Plaintiff's Exhibit
6 484, do you believe that it's a valid or accurate
7 representation of the fuel cost savings TVA could expect by
8 implementing the program of controls Dr. Staudt outlined?

9 A. No, I do not. In addition, while I'm looking at this
10 chart here, he also based it on the amount of SO₂ reduced and
11 the value of that. And again, his values started from his
12 higher number which we would dispute that we would not have
13 seen those kind of reductions because we would have been
14 significantly lower from the starting point. So once again,
15 we don't expect to see what is on that exhibit.

16 Q. In other words, the cost of tons removed would change
17 because there would be less tons to remove.

18 A. Yes, sir.

19 Q. Let's move on now with some of Dr. Staudt's assumptions
20 in Table -- Table 5 of his report which is TVA's Exhibit 265.
21 What emission rate has he assumed for the Kingston plant in
22 his 2013 base case?

23 A. He assumed a 1 -- he assumed a 1.12-pound per million SO₂
24 rate.

25 Q. Is that a scrubbed emission rate?

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1 A. No, that is a nonscrubbed, low sulfur coal emission rate.

2 Q. And what effect would changing Kingston to a scrubbed
3 emission rate have on the projections for the 2013 emissions?

4 A. Kingston would be very similar to the previous plant we
5 discussed, Bull Run. Kingston is going to be a scrubbed
6 plant. It should be in the .15 range. So it would have --
7 his estimate would have overstated our emissions by about a
8 factor of perhaps 6 or 7 as well.

9 Q. Let's look now at Dr. Staudt's assumption about TVA's
10 John Sevier plant, also in eastern Tennessee like the Bull Run
11 and Kingston plants. What emission rate did he assume for
12 John Sevier for sulfur dioxide?

13 A. 1.25 pounds per million.

14 Q. And I'm guessing that's not a scrubbed emission rate
15 either.

16 A. No.

17 Q. What a scrubbed emission rate would be.

18 A. No, that's not. It's a nonscrubber rate at 1.25.

19 Q. And what would be the effect on the emissions projection
20 for the John Sevier plant if the emissions were at a scrubbed
21 rate rather than an unscrubbed rate?

22 A. John Sevier will be in that .15 range as well. It has a
23 different technology, but the rates are going to be very
24 comparable to Bull Run and Kingston. So therefore, it also
25 overstates emissions by a factor of about 6 or 7 in my

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1 opinion.

2 Q. Now, in addition to building new scrubbers, there's been
3 testimony that some of TVA's scrubbers are 25 or 30 years old.
4 Do they have removal efficiencies of a scrubber built in 2008?

5 A. I missed -- I did not hear that last question.

6 Q. I apologize. TVA has -- where are TVA's scrubbers
7 located besides the one at the Cumberland plant?

8 A. We have two units at Paradise, Paradise 1 and 2 are older
9 scrubbers, as well as Widows Creek 7 and 8 also have older
10 design scrubbers.

11 Q. And the Widows Creek scrubber, I believe there has been
12 testimony, was built -- one unit was built in the late '70s
13 and the other in the early '80s; is that correct?

14 A. That is correct.

15 Q. And what sort of removal rates do those scrubbers have?

16 A. We've made a modification to -- or previously in the last
17 couple of years to the unit 8 scrubber. It is operating now
18 more along the lines of a current, modern day scrubber. It is
19 in about the -- I believe it's about .28 pounds per million is
20 what we've been seeing and experiencing with that in its
21 operation.

22 Q. So upgrades have been made to the Widows Creek 7 and 8
23 scrubbers?

24 A. To unit 8. Unit 7 is in progress with work being done
25 during this next planned outage, which I believe is either

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1 next fall or spring.

2 Q. I want to show you a photograph that Dr. Staudt took,
3 apparently, and sponsored in his testimony. It's Plaintiff's
4 Exhibit 79, I believe. And it was on a big blowup before, but
5 I don't see it in the courtroom anywhere.

6 MR. LANCASTER: Ms. Shea, if you will keep zooming
7 out until you can see everything.

8 Thank you.

9 Q. Dr. Staudt testified about this photograph and indicated
10 his belief that it showed a scrubber at the Widows Creek plant
11 being bypassed. Could you comment on that, please.

12 A. A couple of things in this picture. Because of the
13 orientation of it, it is difficult to say whether one stack is
14 unit 7 and one stack is unit 8. However, the facts at that
15 particular plant is unit 8 has never had a bypass and cannot
16 operate that unit without putting gas through the scrubber.

17 Unit 7 originally had a bypass. It has since been welded
18 shut on both sides of the damper and therefore it is
19 inoperable and as such -- and that was done at least a decade
20 ago. So we have no bypass provisions.

21 My understanding was that this was stated to be a bypass
22 condition with the stack that would be, in my photograph, on
23 the right. The one that's a little grayer. The one on the
24 left being the white water vapor plume.

25 What we also did is given this date, unit 8 at Widows

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1 Creek tripped off-line at just after midnight on April 9th,
2 and returned to service sometime mid or end of April 10th
3 after fixing the problem that forced the unit off-line. What
4 you're seeing here is clearly not bypass, but a plant more
5 than likely, not having a timestamp on this particular
6 photograph, that likely is going through a startup.

7 Q. So the plant is either starting up or shutting down as
8 part of that outage, but is not operating; is that correct?

9 A. That would be correct.

10 Q. And I apologize for saying the plant. I think you said
11 unit 8.

12 A. Unit 8.

13 Q. And when you use the word trip, what does that mean?

14 A. The -- there are times when something happens at a plant
15 where you have to take that unit off-line because there's a
16 problem with that plant. In this particular event, in
17 researching it, a boiler tube leaked. The boilers have water
18 and water vapor in them and sometimes they spring leaks and
19 you have to take those units off-line, otherwise you would
20 burn up the boiler.

21 So that is the case for this particular time period on
22 April 9th and 10th at Widows Creek. Had a boiler tube leak
23 that tripped it and forced it to come off the grid. So it was
24 producing no power.

25 Q. And your testimony is that the Widows Creek units 7 and 8

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1 scrubbers do not have the physical capability to be bypassed?

2 A. No. They have -- unit 8 did not have it ever. Unit 7
3 did, although it was never operated to my knowledge. And it
4 has also been welded shut for at least, the plant couldn't
5 remember exactly the date, but it was in excess of a decade
6 that it's been welded shut.

7 Q. I want to talk about one more issues on Dr. Staudt's
8 projections. A different way to reduce sulfur dioxide
9 emissions other than building a scrubber is to do a fuel
10 switch, correct?

11 A. That is correct.

12 Q. And what is that? Could you describe that for the court.

13 A. A fuel switch, one of the -- the differences between SO₂
14 and NOx is that NOx can vary depending on how you operate the
15 equipment.

16 SO₂ is somewhat of a different animal. SO₂ emissions are
17 a function of what type of -- the sulfur that's in the coal
18 unless you do something to physically remove it by -- such as
19 a scrubber. So if you want to lower emissions, you have a
20 choice of changing fuels to a lower sulfur fuel or scrubbing a
21 unit. And that is -- and so a fuel switch is simply going in
22 and taking and burning a different fuel that changes the
23 characteristics of the fuel.

24 In this case, for clean air, the fuel switches that we
25 make are ones that are designed to produce lower SO₂

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1 emissions by burning a coal that has inherently got lower
2 sulfur levels in the coal itself.

3 Q. Is anything particularly involved in making a fuel
4 switch?

5 A. It is a -- quite an elaborate process. It starts with
6 how you get the coal to the plant. If you make a fuel
7 switch -- and an example that I can give you is we are burning
8 a blended fuel at our Kingston plant. Half that fuel is coal
9 that comes from the central Appalachian region. It's a coal
10 that I heard referred to earlier today as a central
11 Appalachian capped coal. Half of the fuel burned at that
12 plant is a capped coal. We recently made a fuel switch to
13 burn a PRB, a Powder River Basin western fuel that comes from
14 Montana and Wyoming. One of the logistics of that is you have
15 to now transport that a long way across the country. So in
16 TVA's case, we had to make asset decisions to invest in coal
17 cars.

18 Furthermore, that Powder River Basin coal is a very, I
19 believe what they call -- the term is fryable coal. It has
20 the ability to spontaneously combust and ignite and it has
21 multiple safety concerns. So you have to come back and
22 retrofit all the aspects of the plant that handle coal. And
23 when we're talking a plant like Kingston, Kingston burns
24 around 4.2 million tons of coal a year. A large volume of
25 coal. Half of that now is going to be this PRB coal. So

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1 there's a lot of opportunity in 4 million tons of coal going
2 through that plant, if you've got something that can combust
3 or ignite, for it to do so.

4 So we put in safety systems, fire suppression systems,
5 dust suppression systems, institute operational changes on our
6 coal handling facilities and coal yards to enable us to handle
7 the coal safely. And that's just the start of the process.
8 We now have the coal into the plant itself.

9 Now we have to get it ground because when you burn coal
10 in a power plant, it is a coal that's ground into -- it's
11 pretty much like baby powder fine and then it's blown by
12 blowers into the boiler. And so now you have to take it, you
13 brought it into the plant, you have to condition and pulverize
14 it. Again, all those systems have to be equipped with this
15 fire suppression and dust suppression for safety. You also
16 have to change the way sometimes you do maintenance on these
17 pieces of equipment because of how they -- the different coals
18 operate.

19 And in the case of PRB, also have to change the way the
20 ignition source in the boiler works. Once you get the coal in
21 the boiler, it does burn, but different coals burn differently
22 and one of the inherent advantages of PRB is it burns
23 differently which reduces NOx in addition to the SO₂, but it
24 requires changes to what we call our combustion process. So
25 we make changes to that.

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1 We may have to change some of the way -- the boiler
2 operations so that as the water circulates from the boiler, we
3 get the boiler water where it needs to be to match how the
4 coal is being combusted.

5 And then on the back end of the plant, you change what
6 comes out of that plant in terms of the emissions. You have
7 different ash characteristics from the different coals and
8 therefore the particular control equipment that have been in
9 place may need to be modified.

10 And typically, what we have seen at TVA with the types of
11 fuel switches we've done, the primary expense tends to be on
12 our precipitators and baghouses to burn the lower sulfur coal.
13 We probably spend the most engineering and dollars as well to
14 do that. However, we clearly spend a lot of money on the
15 front end getting the coal to the plant and getting it through
16 the plant in a safe manner.

17 Q. And has TVA undertaken a number of these fuel switches to
18 reduce sulfur dioxide emissions?

19 A. Since I started in the Title IV position in 1997, I would
20 say that virtually every plant with few exceptions have made a
21 fuel switch, at least one, in some cases we have continued to
22 make additional fuel switches to bring our emissions lower and
23 lower.

24 Q. And is there a fuel switch underway at the Johnsonville
25 plant right now?

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1 A. There is. We have a long range goal by 2011 to have
2 reduced our emissions to about the .85 to .9-pound per million
3 level at the Johnsonville facility. Right now to date we are
4 at a 1.3-pound per million. While we have, in our power
5 supply planning projects, have basically taken and went to
6 2011, said we're going to make a reduction, our plans to date
7 are actually kind of what we call gliding into this lower
8 rate. We're checking it out as we go, so our projections are
9 going to be lower in terms of SO₂ emissions from that plant
10 than what we've internally planned for.

11 Q. And do you recall what Dr. Staudt assumed as an emission
12 rate from the Johnsonville plant?

13 A. He had a 1.81 pounds per million rate assumed in his 2013
14 emission projection.

15 Q. And your expectation of the emissions after the
16 completion of the fuel switch is what?

17 A. Is between .85 and .9. It's a little different on some
18 of the units. Not all the different units at that plant are
19 identical.

20 Q. And what effect would that have on Dr. Staudt's
21 projections?

22 A. It would be a significant change in emissions. It would
23 be cutting our emissions from that plant roughly in half, and
24 that was a very large emitting source in his plan. I believe
25 the number that we calculated was somewhere on the order of

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1 60,000 tons.

2 Q. And what actions have already been taken at Johnsonville
3 in pursuance of this fuel switch?

4 A. We have begun installation of some of the precipitator
5 control technology on the -- to enable us to burn this lower
6 sulfur fuel. As I indicated earlier, if you are going to
7 bring PRB into a plant, you have to make safety modifications.
8 Johnsonville currently burns some PRB. And as a result, we
9 have made multi-million dollar investments in safety, in dust
10 suppression systems to enable that fuel to be brought in and
11 burned to lower the emissions.

12 In addition, on units 7 through 10, we burn a coal called
13 a Uinta, U-i-n-t-a, Uinta coal that is a bituminous coal
14 coming from the western part of the United States. And just
15 because of the type of coal seam that that's in, it seems to
16 be inherent that it comes in with rocks in the middle of it.
17 And so we have had to upgrade our crushers at that particular
18 facility to enable us to screen out the rocks because as we
19 get into our powerhouse, the piece of equipment I refer to as
20 a pulverizer that crushes the coal, which is relatively soft,
21 when it hits those rocks, it just doesn't like it. It causes
22 problems with that equipment. So what we have had to have
23 done is to bring in a crusher to screen out this rock before
24 it gets into the plant itself.

25 Q. And has there been any work done on the back end process

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1 you described before, the pollution controls?

2 A. Yes. We've made changes to several precipitators that --
3 to bring in some new technology to enhance the existing
4 performance of the precipitators. And that right now is
5 actually our critical path to achieving this fuel -- fuel
6 switch down to that .85 to .95 range.

7 Part of the reason we're at 1.3 is we are demonstrating a
8 unit or two at that plant to ensure before we put it all the
9 way across and spend the money that we have that performance
10 and we've worked out all of the issues that might be inherent
11 with a change such as that.

12 Q. And what range of money has TVA already spent putting
13 this fuel switch in place?

14 A. The safety suppression systems, the precipitator
15 enhancements, I don't have the exact number, but it's well
16 over 20 or 25 million dollars would be my estimation.

17 Q. And is it your belief that TVA is committed to seeing
18 this fuel switch through at Johnsonville?

19 A. I do. And as I said, we have -- we've taken our
20 emissions down to about 1.3 pounds per million this year and
21 that's halfway or more than halfway to our goal from where we
22 had been when Dr. Staudt made his projection.

23 Q. Did you also disagree -- we've been discussing sulfur
24 dioxide. Dr. Staudt also made a projection of 2013 nitrogen
25 oxide emissions for TVA. Did you believe that those were

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1 overstated as well?

2 A. I believe that the same analysis show that our internal
3 projections and our power supply and clean air projections
4 showed significant lower NOx emissions as well as the SO₂
5 emissions.

6 Q. And have you prepared your own projection of TVA's
7 expected emissions for the year 2013?

8 A. I have.

9 Q. And how did you go about doing that?

10 A. The process that we used is the process that's described
11 in the clean air strategy process that we alluded to earlier.
12 It also takes the power supply planning process that TVA uses.

13 And what we did is we went back through and we took our
14 clean air strategy, took our emission rates from that
15 strategy, which is what controls and what emission rate from
16 those controls, and applied it to the generation projections
17 that TVA's power supply plant has in 2013 for all 59 of TVA's
18 coal plants.

19 Q. I would like you to look at Defendant's Exhibit 201 in
20 your book.

21 Is Defendant's Exhibit 201 a unit-by-unit -- on a
22 unit-by-unit basis your projections of TVA's expected 2013
23 emissions for sulfur dioxide, nitrogen oxides and mercury?

24 A. They are.

25 Q. And they were prepared using the process you just

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1 described?

2 A. Yes, that's correct.

3 Q. And if you would, look at Exhibit 202.

4 And is Exhibit 202 the same projections with a little bit
5 more detail?

6 A. Yes. That shows the data that's required to project the
7 emissions on the previous page for the process that I
8 described.

9 MR. LANCASTER: Your Honor, we move for the
10 admission of Defendant's Exhibits 201 and 202.

11 THE COURT: Let those be admitted.

12 (Defendant's Exhibits Numbers 201 and 202 were
13 received into evidence.)

14 Q. If you would look at Exhibit 203, please, Defendant's
15 Exhibit.

16 What is Exhibit 203?

17 A. It is a table that I prepared to illustrate the
18 differences between Dr. Staudt's 2013 projections of emissions
19 for TVA from my projections using the process we just
20 described for TVA's SO₂, NO_x and mercury emissions in 2013.

21 Q. And what are those differences?

22 A. SO₂, the difference was that -- was 79 percent lower, NO_x
23 was 52 percent lower, and on mercury emissions it was
24 30 percent lower.

25 Q. In other words, TVA's projected emissions based on its

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1 plans are that much lower than the 2013 base case projected by
2 Dr. Staudt.

3 A. Yes.

4 Q. I'd ask you to look at Exhibit 204 now.

5 Is Defendant's Exhibit 204 a summary of the key
6 differences regarding the sulfur dioxide projections made by
7 you on the one hand and Dr. Staudt on the other hand?

8 A. Yes, they are.

9 Q. And does it show that for the -- for the -- what does it
10 show about those key differences?

11 A. The key differences are on the three things that -- or
12 the several things that we just discussed, the Bull Run and
13 Kingston scrubbers, and the Paradise 3 scrubbers is already
14 operating at the rate that I described. And the Johnsonville
15 scrubber -- I mean, fuel switch that we are in the process of
16 making, that those are plans that are well underway if not
17 completed that -- and that's where a large part of the
18 difference lies.

19 Q. And does the failure of Dr. Staudt to include scrubbed
20 emissions at Bull Run, scrubbed emissions at Kingston,
21 scrubbed emissions with a modern scrubber added at Paradise 3
22 and a fuel switch at Johnsonville, did those alone account for
23 almost \$140,000 -- excuse me, 140,000 tons of extra emissions
24 than Dr. Staudt is projecting?

25 A. That is correct.

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1 MR. LANCASTER: Your Honor, we move for admission of
2 Defendant's Exhibits 203 and 204.

3 THE COURT: Let those be admitted.

4 (Defendant's Exhibits Numbers 203 and 204 were
5 received into evidence.)

6 Q. I want you to look briefly at one more exhibit related to
7 emissions projections, and that's TVA Exhibit 200 in Book 12.

8 What is TVA's Exhibit 200?

9 A. Exhibit 200 is an historical and a projection, future
10 projection of our emissions on SO₂, NO_x, ozone season NO_x and
11 mercury.

12 Q. And when did you make these projections?

13 A. They were the projections that came out of the
14 October 2006 long-term power supply plan process.

15 Q. And are the numbers through the year 2006 historical
16 numbers?

17 A. They are.

18 Q. And are the numbers starting in 2007 projections that you
19 made in early 2007?

20 A. They are.

21 Q. And I note that in early 2007, you projected TVA's sulfur
22 dioxide emissions for the calendar year 2007 to be
23 approximately 425,000 tons; is that correct?

24 A. That's correct.

25 Q. And we now know the actual emissions for 2007, don't we?

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1 A. Yes. They were 374,000 tons.

2 Q. So why were they nearly 50,000 tons lower than you
3 projected?

4 A. Part of that comes back into -- inherent to running the
5 business that we're in. That, one, we don't want to go and
6 commit to the company that we're going to achieve something
7 and then not be able to deliver on that. So there is probably
8 a little bit of conservatism in the rates that we use in our
9 planning process. It's a little easier to plan something and
10 be a little underneath that on a rate basis and come in with
11 lower emissions, which is good, than to be overly optimistic
12 and fail to perform to that emission rate and have high
13 emissions, which is bad for two reasons.

14 Obviously, the higher emissions means you didn't achieve
15 your goal that you committed to the company. And the second
16 piece is in a long-term trend of wanting to reduce our
17 emissions, it's difficult if you have a control strategy to
18 try to inject new controls in there if you have been overly
19 optimistic on your performance of those units.

20 Q. So with one year of experience since you made your
21 projections which have been used in this case, so far the
22 actual emissions have been below the level that you projected
23 for sulfur dioxide; is that correct?

24 A. That is correct.

25 MR. LANCASTER: Your Honor, we move for the

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1 admission of Exhibit 200.

2 THE COURT: Let it be admitted.

3 (Defendant's Exhibit Number 200 was received into
4 evidence.)

5 Q. I want to turn now and address the issue of cost. Are
6 you aware that Dr. Staudt outlined a set of pollution controls
7 that he believes TVA should install and placed a dollar figure
8 of \$3 billion capital cost on that; is that correct?

9 A. I am.

10 Q. And have you examined that cost estimate that Dr. Staudt
11 made?

12 A. I have.

13 Q. And have you concluded anything about it?

14 A. That those cost projections were significantly lower than
15 our internal cost for those controls. Our internal cost for
16 those same controls would have been \$5 billion as opposed to
17 Dr. Staudt's \$3 billion.

18 Q. Are there examples of Dr. Staudt's estimates where he
19 estimated the cost of a control that we know the actual cost
20 of?

21 A. Yes, Paradise 3. But also, we are very close to actual
22 cost on where we will finish at Bull Run. Mr. Nash indicated
23 that it was a \$274 million projection, I believe it was.

24 Q. And what was Dr. Staudt's projection for the cost of the
25 Bull Run scrubber, do you recall?

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1 A. No, I don't have that number off the top of my head. Is
2 it anywhere in the documents?

3 Q. If you'll turn in your book to Exhibit 241. Does that
4 appear to be Dr. Staudt's expert report in this case?

5 A. 241? In my book 241.

6 Yes, it is. Okay.

7 Q. And if you'll turn near the back of that report, around
8 Page 27 or 28 is a Table 8 that is Dr. Staudt's cost estimate,
9 and I would ask if that would refresh your recollection about
10 Dr. Staudt's estimate for the cost of a scrubber for the Bull
11 Run plant.

12 A. Dr. Staudt's -- Dr. Staudt's projection in this expert
13 report was \$172 million.

14 Q. So his projection for the cost of a scrubber at Bull Run
15 was some \$100 million below the actual cost TVA's
16 experiencing?

17 A. Yes.

18 Q. I would ask you to turn to Exhibit 205 in that same Book
19 12, Defendant's Exhibit 205.

20 Is Defendant's Exhibit 205 a table summarizing the cost
21 estimate that you prepared to construct the capital -- the
22 capital costs of constructing the pollution controls
23 identified by Dr. Staudt?

24 A. It is.

25 Q. And do they -- in summary what does it show?

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1 A. It shows for the Bull Run scrubber that we're referring
2 to, a cost of, I believe -- is it 299 million? Right at
3 300 million. It's a little blurry on my copy here. I believe
4 that's what it says, though.

5 Q. But in terms of the total capital costs to build the --
6 to build the program of controls outlined by Dr. Staudt?

7 A. To build that it is the \$5 billion that I alluded to
8 earlier, yes.

9 Q. And if you would turn to Defendant's Exhibit 206.

10 What is Defendant's Exhibit 206, Mr. Staudt?

11 A. It is a table that summarizes Dr. Staudt's estimated cost
12 versus TVA's estimated capital cost broken down by NOx
13 controls, SO₂ controls, as well as the total controls. It
14 shows the \$3 billion total cost from Dr. Staudt and TVA's
15 5 billion.

16 It also shows that on the NOx controls, Dr. Staudt had
17 764 million; TVA's estimation was 951.

18 And the major difference was in the SO₂ controls arena
19 which he had estimated 2.2 billion and TVA's cost for SO₂
20 controls was \$4 billion.

21 MR. LANCASTER: Your Honor, I'd move Defendant's
22 Exhibits 205 and 206 into evidence.

23 THE COURT: Let those be admitted.

24 (Defendant's Exhibits Numbers 205 and 206 were
25 received into evidence.)

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1 Q. Mr. Scott, in conclusion, based on your experience, your
2 understanding of TVA's plans both for generation and for its
3 clean air strategy, how confident are you in the projections
4 you've made for TVA's 2013 emissions for sulfur dioxide and
5 nitrogen oxides?

6 A. I feel very comfortable that those emission projections
7 will be achieved.

8 MR. LANCASTER: We have no further questions, Your
9 Honor.

10 THE COURT: All right.

11 MR. GOODSTEIN: Thank you, Your Honor.

12 CROSS EXAMINATION

13 BY MR. GOODSTEIN:

14 Q. Mr. Scott, were you here when Dr. Staudt testified?

15 A. No, I was not.

16 Q. So you didn't hear Dr. Staudt explain that his 2013 base
17 case is reflective of controls that are currently installed
18 and operational at TVA plants. You didn't hear that
19 testimony.

20 A. I did not hear his testimony, no.

21 Q. Were you here when Lyle Chinkin testified?

22 A. No, I was not.

23 Q. So you didn't hear his testimony about why air quality
24 modelers selected 2013 as the base control modeling scenario.
25 You didn't hear that testimony, did you?

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- 1 A. No, I did not.
- 2 Q. You didn't hear Mr. Chinkin explain that they do that so
3 they can compare the base case and the control case in one
4 year. You didn't hear that testimony, did you?
- 5 A. As I indicated, I was not here for their testimony.
- 6 Q. And the emissions reduction projections that you
7 described in your direct testimony, for Johnsonville, that
8 projected fuel switch, that's not currently operational now,
9 is it? It's not fully operational.
- 10 A. Not fully, but it is more than halfway to there, yes.
- 11 Q. But it's not currently fully operational; is that your
12 testimony?
- 13 A. That's true.
- 14 Q. And the John Sevier scrubber project, that's not
15 currently operational either, is it?
- 16 A. No, sir.
- 17 Q. In fact, that's not even under construction yet, is it?
- 18 A. That's correct.
- 19 Q. And the Bull Run scrubber, that's not operational yet
20 either, is it?
- 21 A. No.
- 22 Q. And the Kingston scrubber, while under construction,
23 that's not currently operational either, right?
- 24 A. No, it is not.
- 25 Q. But in your projection you included those emission

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- 1 reductions for all of those projects; isn't that true?
- 2 A. Absolutely.
- 3 Q. And you also included the costs for those plants in your
- 4 projection of Dr. Staudt's program; isn't that true?
- 5 A. Yes.
- 6 Q. So you didn't include the emissions from those plants,
- 7 but you included the costs of those projects; isn't that true?
- 8 A. Did not -- yes, that's correct.
- 9 Q. And you also assumed year round SCR operation.
- 10 A. Yes, sir.
- 11 Q. And that's not currently operational yet either, is it?
- 12 A. No.
- 13 Q. And you mentioned potential fuel cost savings for wet
- 14 scrubber units --
- 15 A. That's correct.
- 16 Q. -- in your direct testimony.
- 17 Was that factored into your \$5 million cost number?
- 18 A. Those were capital costs.
- 19 Q. So fuel cost savings were not part of that --
- 20 A. No.
- 21 Q. -- analysis, correct?
- 22 A. They were not. That was capital costs.
- 23 Q. But you testified that TVA may be able to enjoy
- 24 substantial fuel cost savings by scrubbing additional units;
- 25 isn't that true?

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- 1 A. At some particular units, yes, sir.
- 2 Q. All right.
- 3 A. It's highly varied from plant to plant.
- 4 Q. Okay. The photo of Widows Creek.
- 5 A. Yes, sir.
- 6 Q. If that plant was in startup mode, that would mean that
- 7 the scrubber was not operating, correct?
- 8 A. No, sir.
- 9 Q. But it means that the boiler is operating; is that true?
- 10 A. That -- the flue gas must pass through the scrubber on
- 11 unit 8.
- 12 Q. But wouldn't that stack look white and steamy if the
- 13 scrubber was fully operational?
- 14 A. Not necessarily on startup, no. I don't believe on
- 15 startup --
- 16 Q. But that is particulate going out that stack in that
- 17 photo, isn't it?
- 18 A. It appears to be that way, yes.
- 19 Q. You mentioned a Regulatory Outlook Document in your
- 20 direct testimony.
- 21 A. Yes, sir.
- 22 Q. Do you know if that was ever produced to North Carolina
- 23 in this case?
- 24 A. I can't speak to that one.
- 25 Q. Do you know whether it's maintained confidential at TVA?

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- 1 A. I would expect a document like that might very well be
2 confidential.
- 3 Q. So it wouldn't surprise you if it was never produced in
4 discovery in this case?
- 5 A. I can't speak to that.
- 6 Q. And you testified on your direct that the clean air plan
7 is revised on a yearly basis; is that correct?
- 8 A. At least on a yearly basis.
- 9 Q. And your projections for TVA's emissions is based on the
10 control equipment outlined in TVA's clean air plan, right?
- 11 A. That is correct.
- 12 Q. And that's based on the CAIR and the CAMR rule, isn't it?
- 13 A. That was the major planning assumption that went into
14 that, that's correct.
- 15 Q. In fact, that's what you called your projection case,
16 isn't it?
- 17 A. That's correct.
- 18 Q. The CAIR/CAMR projection case.
- 19 A. That is correct.
- 20 Q. And as we know, both of those rules have been vacated; is
21 that true?
- 22 A. That is true.
- 23 Q. So you based your projections on the clean air plan which
24 is subject to change as you testified clearly previously.
- 25 A. As I indicated, uncertainty is a factor, yes.

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1 Q. You said, in fact, it will change.

2 A. Yes, sir.

3 Q. That plan could change in a number of ways; isn't that
4 true?

5 A. Yes.

6 Q. And TVA's strategic plan provides for the use of
7 allowances, doesn't it?

8 A. It does offer a limited use, yes.

9 Q. And TVA has used allowances in the past; isn't that true?

10 A. In what -- I need clarification.

11 Q. To meet regulatory requirements since at least 1997.

12 A. That we have used -- I'm not sure I would agree with that
13 statement.

14 Q. Do you recall giving deposition testimony in this case?

15 A. Yes, I do.

16 Q. Page 122.

17 MR. GOODSTEIN: Could you put that up, please.

18 Q. Line 7. And I believe I asked you this question,

19 Mr. Scott. "So throughout this entire period that you've been
20 involved in the clean air planning process, there's been some
21 use of allowances?

22 "Answer: Uh-huh."

23 Do you recall giving that answer?

24 A. I'm not sure what, in this particular context, the entire
25 period refers to. So I would have to back up and understand

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1 that.

2 MR. GOODSTEIN: Your Honor, if I could approach,
3 I'll give Mr. Scott a complete copy of his deposition. That
4 might be helpful.

5 THE COURT: You may.

6 Q. We were talking about your testimony at Page 122.

7 A. Right.

8 Q. So feel free to look at the context.

9 So do you see my question: "So throughout this entire
10 period that you've been involved in the clean air planning
11 process, there's been some use of allowances.

12 "Uh-huh.

13 "That's a yes.

14 "Some use of the -- we have bought and sold allowances."

15 MR. LANCASTER: I would request that Mr. Goodstein
16 continue reading the remainder of that answer. Under Rule 106
17 of the Federal Rules of Evidence, it ought in fairness be
18 considered with the portion of the answer he read.

19 Q. "We have bought and sold allowances. We have not used
20 allowances that we hadn't created ourselves."

21 A. That is a more accurate statement. Use of allowances
22 implies to me that we used it in a compliance fashion. In
23 fact, if I recall, when I asked you, you said for compliance.
24 I don't believe we have used SO₂ allowances for compliance.

25 Q. But you have bought and sold allowances; isn't that true?

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- 1 A. Yes, we have.
- 2 Q. And some of the controls in the clean air plans that you
3 used for your projections could be changed or delayed by using
4 allowances; isn't that true?
- 5 A. That is -- in a cap-and-trade world, that is part of the
6 provisions of that rule that flexibility is there, yes, sir.
- 7 Q. Okay. And the emissions that you estimated for TVA are a
8 snapshot of one year; isn't that true?
- 9 A. That is correct.
- 10 Q. So they might not be reflective of emissions in 2012 or
11 in 2014; just that one year.
- 12 A. In a broad sense, yes, that would be correct.
- 13 Q. And you included in there some outages for some units;
14 isn't that true? Some long-term outages.
- 15 A. Are you referring to what we at that time called our
16 extended outage plan?
- 17 Q. Yes. For Johnsonville you had one at Johnsonville 5 and
18 6, for example.
- 19 A. Yes.
- 20 Q. And those outages may change based on low demand, system
21 or plant conditions; isn't that true?
- 22 A. That is correct.
- 23 Q. And in fact, the clean air plan has changed. At one time
24 there was a scrubber planned for Colbert unit 5 and that was
25 announced in 2002, correct?

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- 1 A. That is correct.
- 2 Q. And then that was postponed until 2015; isn't that true?
- 3 A. I believe that is the current time window.
- 4 I also indicate, as Mr. Nash did, that that's somewhat
- 5 half of the equation. The other side of that is we now have a
- 6 John Sevier scrubber that we brought into our plan that had
- 7 not been part of that before. So I agree totally Colbert 5
- 8 has been moved out. We also now have a scrubber on four units
- 9 of 800 megawatts at John Sevier.
- 10 Q. I want to ask you about the IPM. We discussed this in
- 11 your deposition. You're familiar with the EPA's Integrated
- 12 Planning Model, Mr. Scott?
- 13 A. Yes, I am, in the broad sense.
- 14 Q. And you know that EPA uses the IPM; is that true?
- 15 A. Yes.
- 16 Q. And TVA participated in VISTAS and VISTAS used the IPM;
- 17 is that true?
- 18 A. I'm not particularly personally familiar with what VISTAS
- 19 is using, but it wouldn't surprise me if they use the IPM.
- 20 Q. And TVA factors in growth when it -- as part of your
- 21 planning, you factor in growth of electricity demand; isn't
- 22 that true, Mr. Scott?
- 23 A. Yes, sir.
- 24 Q. And the growth rate estimates in the IPM could actually
- 25 be higher or lower than actual future growth rates.

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1 A. And granted, they will not be what everybody plans so
2 they will be one or the other. Yes, I agree.

3 Q. Mr. Scott, the announcement for the John Sevier scrubber
4 project, that was issued in 2007; isn't that true?

5 A. I'm not -- I would say it was in the recent history. I
6 am not sure when in 2007 or 8 exactly. I don't have that off
7 the top of my head.

8 Q. Recently. After January '06.

9 A. Yes, after January 06, uh-huh.

10 MR. GOODSTEIN: We have no further questions of
11 Mr. Scott, Your Honor.

12 MR. LANCASTER: I have no redirect, but I would note
13 that Mr. Goodstein did not, in fact, read Mr. Scott's full
14 answer and it will only take one minute to have him read his
15 full deposition testimony for the record, Page 122, Lines 7
16 through 22.

17 THE COURT: All right. You may proceed to do that.

18 THE WITNESS: Let me get to that. It was lines?

19 MR. LANCASTER: Page 122, Lines 7 through 22.

20 THE WITNESS: Line 7, "Question: So throughout this
21 entire period that you've been involved in the clean air
22 planning process, there's been some use of allowances?"

23 My reply: "Uh-huh.

24 "That's a yes?

25 "Answer: Some use of the -- we have bought and sold

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1 allowances, we have not used allowances that we hadn't created
2 ourselves." That's through Line 14.

3 "In terms of -- so we haven't had to use them for
4 compliance, there's -- just to make sure that you understand
5 the difference, it's one thing to buy and sell an allowance
6 for a financial valuation gain, it's another one to have to go
7 buy an allowance for compliance reasons. We have yet to --
8 need to do that, we have not bought an allowance in SO₂ for
9 compliance usage other than replenishing what we sold."

10 MR. LANCASTER: Nothing further, Your Honor.

11 MR. GOODSTEIN: Could we read the next few lines as
12 well, Your Honor?

13 THE COURT: Two more lines?

14 MR. GOODSTEIN: A few more, yes, three or four more
15 lines.

16 THE COURT: All right. Go ahead.

17 THE WITNESS: Line 23, starting there?

18 MR. GOODSTEIN: Yes.

19 THE WITNESS: Okay. "Question: So you have used
20 banked allowances --

21 "Answer: Yes, sir."

22 MR. GOODSTEIN: And then the next question and
23 answer.

24 THE WITNESS: "Question: -- to meet requirements?

25 "Yes, sir."

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1 MR. GOODSTEIN: And then the next question and
2 answer.

3 THE WITNESS: "And that's still the policy at TVA?
4 "Yes, sir, we bank for self-compliance."

5 MR. GOODSTEIN: Thank you, Your Honor.

6 MR. LANCASTER: Nothing further, and I appreciate
7 the court's indulgence in the reading lesson.

8 THE COURT: That's quite all right.

9 All right. We will take our recess, marshal, until
10 tomorrow morning at 9 o'clock.

11 (Evening recess at 5:55 p.m.)

12 UNITED STATES DISTRICT COURT

13 WESTERN DISTRICT OF NORTH CAROLINA

14 CERTIFICATE OF REPORTER

15

16

17 I certify that the foregoing transcript is a true
18 and correct transcript from the record of proceedings in the
19 above-entitled matter.

20

21 Dated this 23rd day of July, 2008.

22

23

24 s/Cheryl A. Nuccio
Cheryl A. Nuccio, RMR-CRR
25 Official Court Reporter

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